AGRICULTURAL EDUCATION FOR ADOLESCENTS IN PENNSYLVANIA

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IN EDUCATION
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CHAPTER I

INTRODUCTION

STATEMENT OF THE PROBLEM

About three decades ago our country began to focus its attention upon the problem of providing for agricultural education in our public secondary schools. Consequently the United States Congress subsidized a program of agricultural education. In 1917 it created the Federal Board for Vocational Education in cooperation with the States.

The Smith-Hughes Act is an attempt on the part of the Federal government to help meet the problem of vocational education. This Act was passed by Congress in 1917 and was approved by President Wilson on July 17 of the same year.

It was "an act to provide for the promotion of vocational education; to provide for co-operation with the States in the promotion of such education in agriculture and the trades and industries; to provide for co-operation with the States in the preparation of teachers of vocational subjects; and to appropriate money and regulate its expenditure."[1]

A great deal has been written concerning agricultural education in the United States. Such phases as the nation and its agriculture, our system of agricultural education and the history of the agricultural college movement have been treated at length. Much research has been carried on in the field of agriculture. The problem of program making and curriculum construction has received less attention. Therefore, it is to be the subject of this study.

In a previous study of a similar kind, the author found that a large percentage of high school entrants enrolling in agricultural courses drop out before completing them. Therefore, the field that needs particular emphasis is that of building a worthwhile program for adolescent boys and girls whose interests are agrarian. Such a program must meet their needs and their interests in order to assure their completing the high school courses.

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1. "Agricultural Education," p. 51, Federal Board for Vocational Education, Washington, D. C., Bulletin 13, 1930 (Smith-Hughes Act, Section 1).

One may best view this problem by considering some census figures. In 1920 the total population of Pennsylvania was 8,720,017 as compared to 9,631,350 in 1930. In 1920 there was a farm population of 941,360 as compared to 846,240 in 1930. In 1920 the urban population comprised 64.3 per cent. of the total population as compared to 67.8 per cent. of the total population in 1930. From 1920 to 1930 the rural population decreased from 35.7 per cent. of the total population to 32.2 per cent. of the total population. Within the rural population, that of the farm decreased from 10.8 per cent. to 8.8 per cent. of the total population.

In spite of such decreases, there still were 172,419 farms in Pennsylvania in 1930. Of the total land area 53.4 per cent. or 44,832 square miles, was still used for farming purposes. Obviously, agriculture still is a major occupation.

As will be shown later, there are an insufficient number of schools offering courses in agricultural education. There is also a poor distribution of such schools in many of the counties of Pennsylvania.

The problem which this study attempts to analyze may better be understood in the words of Cook when he speaks of agriculture in the United States. "Agriculture is thought of in a much different way at the present time than it was formerly. In the past people thought anybody could farm even though they had no education. That day has passed, and the people look now upon the farm as a business. They realize that the farmer must use good judgment and careful management if he is going to compete with his neighbors and also make a profit.

"The soil is rapidly depleting; the country is becoming more densely populated; many pests have come in; marketing problems are changing daily; competition is becoming keener each year; consequently, agricultural training is more essential than ever before. The standards of rural living today are much higher than in the past. At the present time many farm homes, with all their modern conveniences, are just as attractive as city homes. Vocational Agriculture can play an important part in rural life through encouraging better methods, better homes, more conveniences, better schools and churches.

"In 1932 there were 4,513 federally aided departments of vocational agriculture with a total enrollment of 143,079 students in all day work. This number does not include the 11,190 enrolled in day unit work, the 87,138 registered in evening schools, nor the 10,972 enrolled in part-time work in the federally aided schools. These figures indicate that this work is a very important phase of the high school curricula. Surely giving students training in stock judging, milk testing, egg grading, poultry culling, seed identification, weed eradication, grain grading, seed selection, marketing, rural economics, accounting, management, and horticulture is of incalculable importance. The additional training in the supervised farm practice work adds practicability to the work . . . . . "[2]

Therefore, the problem with which this study is concerned is that of providing for an adequate program of vocational agricultural education through a more vital curriculum and a more equitable distribution of educational centers. Briefly, the problem to be solved is that of meeting squarely the needs and interests of boys and girls of high school or adolescent age.

Does agricultural education in Pennsylvania, in its present status, adequately serve the farm population? Manifestly, it does not. Abundant evidence is presented which indicates the vastness of the problem at hand.

Purpose of the Study

The purpose of this study may be expressed briefly by the following statements:

To make a study of the factors that enter into a program of agricultural education. Such a study requires a consideration of:

(1) the needs of Pennsylvania in order to set up standards which will insure the extension and further development of agricultural education in Pennsylvania;

(2) the farm situation as a partial basis for the determination of a program of agricultural education;

(3) the growth, development, and status of agricultural

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2. Cook, Glenn Charles—A Handbook on Teaching Vocational Agriculture, Interstate Printing Co., Danville, Ill., 1933, pages 17-18

education to date, as a partial basis for the determination of a program of education in agriculture;

(4) the legal status of agricultural education with the view of ascertaining its support;

(5) agricultural education in relation to school costs and school attendance in Pennsylvania as one of the factors in planning a program;

(6) the need for reorganization of agricultural education in Pennsylvania.

An attempt will be made to derive appropriate determinants for agricultural education through a study of the problem as a whole, and to show the interrelationship of agriculture in Pennsylvania and a program of agricultural education for adolescents, which is to be in support of the original vocational agricultural legislation as expressed in Section 10 of the National Vocational Education Act. The purpose of this act is described as follows:

1. Such education shall fit for useful employment.
2. Such education shall be of less than college grade.
3. It shall be designed to meet the needs of persons over fourteen years of age who have entered upon or who are preparing to enter upon the work of the farm or of the farm home.

The purpose of the study, finally, is to aid in solving the problems which the school faces, namely: the problem of carrying vocational agricultural education to boys who probably will farm; the problem of stimulating an interest in farming in boys who should farm; the problem of building a program which will meet more adequately the problems facing agriculture; and the problem of formulating a program whose curriculum will represent a practical source for educational development, vitalized by agricultural activities.

SOURCES OF DATA

The sources of the data include:

1. Pennsylvania School Code.
2. Annual Reports of the Federal Board for Vocational Education.
3. Annual Descriptive Reports of the State Board for

Vocational Education to the Federal Board for Vocational Education.

4. Affidavits of the Annual Financial Reports of the various Counties to the Department of Vocational Education.
5. Statistical Reports of the Superintendent of Public Instruction.
6. Fifteenth Census of the United States: 1930 on Agriculture.
7. Bulletins issued by the U. S. Office of Education.
8. Pennsylvania State Bulletins on Agriculture and Agricultural Education.
9. Textbooks, periodicals and official publications.
10. Summaries of Studies in Agricultural Education.

These sources were found in various offices of the State Educational Building, State Educational Library, and a few other libraries. The U. S. Printing Office also furnished valuable information.

11. Questionnaire to the agricultural teachers and supervisors of Pennsylvania.
12. Questionnaire to the county farm agents of Pennsylvania.

THE METHOD OF PROCEDURE

Prior to collecting the data a definite outline of the phases entering into this study was made.

An attempt was made to collect necessary data from original and official sources. Questionnaires were also used.

I. The first step was to assemble material on the history of the "Status of Agriculture in Pennsylvania." Data on the "Present Status of Agriculture in Pennsylvania" were collected. Use was made of statistical reports issued by the Bureau of Census containing such information as:

1. The percentage of land area in farms in 1930 and the number of farms in each county of the State.
2. Changes in number of farms and value of farm property. An attempt was made to classify counties on the basis of land area in order to determine types of counties.

Data showing number of farms in Pennsylvania over a sixty-year period was used to show the trend of agriculture. Several graphs were made to clarify the data.

Data showing the "Status of Population engaged in Agriculture in Pennsylvania" were collected.

United States Census Reports were made the basis for this study. Account was taken of the trend in population in urban and rural districts. The population that agriculture in Pennsylvania claims was then compared with the populations claimed by each of nine other leading industries in the state.

Available information on "Migration to and away from farms in Pennsylvania" was used.

There was an analysis made of data regarding "Farm Ownership and Tenancy in Pennsylvania," based upon the U. S. 1930 Census.

II. The second step involved the task of tracing the origin, development and progress of "Agricultural Education in Pennsylvania." The historical background was first presented. This was followed by a rather detailed study of the present status of agricultural education in Pennsylvania. This study took into account such aspects as the number and location of agricultural centers, the enrollment in vocational agricultural education, the development of state project contests over a decade, the extent and growth of specific projects, including the name of the project, scope, and number of pupils enrolled in each project. This step also included a careful summarization of the "Annual Descriptive Reports of the State Board for Vocational Education to the Federal Board for Vocational Education."

Then followed a study of the "Types of Education Provided in Pennsylvania for Training in Agriculture." Official sources furnished the description for each type common in the State of Pennsylvania as approved by the State Department of Education.

A description of the types of agricultural school in Pennsylvania as classified by the Department of Public Instruction was presented.

III. The third step was to analyze "Legal Provisions Relating to Agricultural Education in Pennsylvania." The Pennsylvania School Code was used as a source. Data concerning sources of support were considered under three types: federal, state, and local. Both federal and state official publications were used. The trend of federal, state, and local aid was shown graphically.

IV. The fourth step was to analyze school costs and school attendance for agricultural education. In considering transportation costs Lancaster County was selected as typical.

V. The fifth step was to show the "Need of Agricultural Education in Pennsylvania" by three major factors, namely: (1) Inequality of opportunity in agriculture; (2) Economic and social change; (3) Vocational instability. Federal and state sources were consulted for developing these factors.

A number of specific needs were set forth in detail followed by a résumé of the factors bearing upon the problem of need as set forth in the thesis up to this point.

VI. The sixth step was to set up certain specific determinants for agricultural education. They were classified as: (1) Major farm enterprises and (2) Analysis factors for the determination of recommendations. This involved the use and analysis of statistical matter gleaned from government and other official sources. Questionnaires were sent to the County farm agents of Pennsylvania and to the agricultural teachers and supervisors as well, in order to glean data pertinent to establishing determinants.

VII. The seventh step includes the summary and conclusions of the study.

VIII. As the eighth step, an attempt was made to present "Suggestions for Consideration in a Program for Agricultural Education in Pennsylvania." Studies of various programs of agricultural education both in the U. S. and other countries were consulted. The following outline contains the main points of the body of suggestions.

1. Objectives.
2. Principles.
3. Suggestive criteria for the selection of content.
4. Curriculum.

5. Practical aspects.
6. Agricultural program.
7. Supervised farm practice.
8. Project work.
9. "Future Farmers of America."

IX. The ninth and final step involved the task of presenting recommendations, classified according to: (1) School administration and organization, (2) Instruction, (3) Pupil activities, and (4) General.

DELIMITATION OF THE FIELD

The field of investigation is vocational education as defined in the Pennsylvania School Code, Article XXXIV, Section 3406, Paragraph 4. "Vocational Agricultural Education shall mean that form of vocational education which fits for the occupations connected with the tillage of the soil, the care of domestic animals, forestry, and other wage-earning or productive work on the farm."

No attempt is made to determine the efficiency of instruction by a system of scientific measurement; neither is there an attempt made to determine the training status of the instructors or the adequacy of the textbooks used.

Consideration of the types of intelligence that would profit most by agricultural education lies outside the scope of this study.

No reader is warranted in using this study as a basis for criticising the administrative policies of the present administration of agricultural education in Pennsylvania.

Specifically, this study shall deal with the distribution of centers for agricultural instruction and the curriculum offered.

LIMITATIONS OF THE STUDY

There were certain factors which limited research for this study. For example, official reports over a period of years lacked uniformity in the classification of items and in a number of cases, omitted certain items in some annual reports that were given in others. In some cases there was evidence of carelessness in filing. This accounts for the fact that certain data, e. g.

enrollments, were not available. Documents and reports of recent years indicate a more careful handling and preserving of important information.

GENERAL INTEREST AND TIMELINESS

Vocational agriculture in relation to economic and social adjustments is now facing not only new but momentous problems.

In his "Report of Conference on the Relation of Vocational Agricultural Education to Emergency and Long-Time Programs Affecting Agriculture," George F. Zook, former United States Commissioner of Education says, "Legislation by Congress creating and vesting with large powers the Agricultural Adjustment Administration, the Farm Credit Administration, and other agencies whose operations affect more or less directly the welfare of the farmer in the present emergency has naturally involved re-adjustments in established programs of vocational agriculture and some modification of State policies in their permanent programs of vocational education."[3]

An examination of the Annual Descriptive Reports of Vocational Education to the Federal Board for Vocational Education, from the earliest issue to the latest, shows a consistent increase in enrollments in agricultural education courses, rapid increase in home project work, and an ever-increasing demand made by the farmers for help from agricultural teachers and supervisors as well as a yearly increased demand for the establishment of agricultural centers.

The demand for help made by farmers on their farms reflects the urgent need of providing training for adolescent boys before entering farming themselves.

In 1920 a survey was made of one* of the leading agricultural counties for the purpose of determining the need for agricultural education. It was found that of the 1,057 pupils enrolled in high schools in the county but 109 or approximately 10 per cent. were from the farm. Of these 109 from farms, 37 were boys and 72 were girls. It was also found that there were 3,083 farms in the county. One boy to every 83 farms was enrolled in high school. As a result of this survey, agricultural instruction has since been given annually to approximately 600 persons especially interested in such instruction. During 1922 to 1923 instruction was given to 657 persons.[4]

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[3] Vocational Agriculture in Relation to Economic and Social Adjustment, p. III, Bulletin 177, 1934, U. S. Government Printing Office.

* Cambria County.

The following summarization of points is clearly indicative of a keen general interest in the problem

1. Increased annual demand for agricultural instruction for adult farmers.
2. Increases in enrollments, annually, of school age students, in agricultural courses.
3. The rapid growth of project work.
4. Need for new and significant adjustments to current economic and social conditions.

PREVIOUS RESEARCH

From approximately 375 studies and summaries of studies in Agricultural Education, the author found no study that shows marked similarity to this one. A large number of related studies have been made, some of which will be submitted in brief summary form.

Border, Joseph Earnest, and Palmer, Ronald Harry:[5] A Course of Study in Making a Living on the Farm; An Advanced Course in Vocational Agriculture for Montana Farm Boys.

This study included an analysis of the abilities needed for organizing and conducting the business on Montana farms to make them self-supporting.

Problem sequences were developed for teaching these abilities. Subject matter was presented as principles to be brought out in solving the problems. Ways of improving farms and teaching aids were included in the study.

Boyd, John B.:[6] The Use of Available Data in Planning State Courses of Study in Vocational Agriculture for the High Schools in Missouri. Thesis, M. S., 1922, Cornell University, 107 pp., Library, Cornell University, Ithaca, N. Y.

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[4] Annual Descriptive Report to the Federal Board of Vocational Education, 1922-1923.

[5] Summaries of Studies in Agricultural Education, pp. 31-32, Bul. 180, 1935, U. S. Gov't Printing Office, Washington, D. C.

[6] *Ibid.*, p. 32.

The purpose was to use available data relating to agriculture in planning of courses of study in vocational agriculture for the high schools of Missouri.

The major findings were: (1)Variations in type of farming and farm practices exist in the different regions of the State; (2) There are declining enterprises which call for minor consideration; (3) There are potential or increasing enterprises which demand more attention in vocational teaching programs; certain important enterprises peculiar to certain regions demand special consideration in planning courses to meet their needs; particular phases of certain farm enterprises common to all regions could be considered as a core in planning courses of study for the State as a whole; certain enterprises exist, common to the State as a whole, but which are carried on for different purposes and by different methods and thus vary greatly as farm enterprises in different regions of the State. These demand great flexibility in courses of study planned for the State as a whole . . . .[7]

Burd, Forrest Glover:[7a] A Method of Determining Courses of Study in Vocational Agriculture Based on the Analysis of the Business of Selected Farmers in Kentucky. Thesis, M. S., 1928, Cornell University, 77 pp., Library, Cornell University, Ithaca, N. Y., also Monograph No. 6. Federal Board for Vocational Education.

"The purpose was to arrive at principles, the application of which will enable teachers of vocational agriculture to make courses of study based on the practices of local farmers."

"The farm business of 78 farmers, widely distributed in Kentucky was surveyed. Under the heading "Principles Relating to the Sources of Course Content," the author cites ten principles, calling attention to the consideration of such factors as size of farm, capital distribution, frequency and scope of enterprises, expenditures and sources of income on the successful farms, as bases for determining content. Four "Principles Relating to Arrangement of Course Content" stress such factors as the need for flexibility, seasonal sequence, and provision for supervised farm practice."[8]

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[7] *Ibid.*
[7a] *Ibid.*

Byram, Harold Moore:[9] The Use of Judgments of Master Farmers in Constructing the Curriculum in Vocational Agriculture. Thesis, M. S., 1928, Iowa State College, 75 pp., Library, Iowa State College, Ames.

The purpose was to summarize the judgments of a large group of master farmers in all parts of the country regarding what should be taught in high school courses in vocational agriculture. One hundred seventy-five farmers were included.

Among the significant findings were the following: 67 per cent. of these master farmers believed formal training in agriculture is essential to success; an additional 26 per cent. said it would help a great deal; these farmers rated as first in importance, training in farm management, live stock management, and soil management; they ranked shop and engineering training low; they stressed certain activities not at that time greatly emphasized in courses in vocational agriculture, such as prevention of diseases in live stock, prevention and control of insects and diseases of plants, business practices, improving the farm as a home, utilization of farm income, marketing, leadership activities, the organization of farmers, management of farm labor, selection and purchase of farm machinery and equipment.

Eaton, Theodore Hildreth:[10] Vocational Education.

The purpose was to analyze and describe conditions in respect to vocational education in rural areas of New York State and to make recommendations for further development of this work.

In this survey, it was recommended that provision be made for: giving more attention to teaching for vocational choice; providing more intimate and frequent supervision through some unit intermediate between State and high school district; increasing the allotment for travel to teachers for the supervision of home work; modifying the curriculum for country boys and girls enrolled in vocational courses; and giving greater publicity to vocational education.

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[8] *Ibid.*, p. 39.
[9] *Ibid.*, p. 40.
[10] *Ibid.*, pp. 180-181.

Getman, Arthur Kendall:[11] Interpreting Local Practices in Building Agricultural Curriculums. Vocational Education Magazine, 2:653-57. May, 1923.

The purpose was to construct agricultural curriculums based on community surveys.

Fifty-five farms were surveyed at Richmond, Ill., and 120 farms were surveyed at Geneva, N. Y.

Material differences in the farm situations in the two communities were found, warranting differences in the courses of study to be taught.

Higbie, Edgar C.:[12] An Objective Method for Determining Certain Fundamental Principles in Secondary Agricultural Education.

The data for this study . . . . . . were obtained by the writer while handling classes or groups of men in person at a number of universities, so that the procedure was sufficiently well standardized as to make comparisons possible.

The men were seated as in a regular class or laboratory period. They were asked to make a list of the names of fourteen or fifteen farmers whom they knew very well. The men to be chosen were to be actually engaged in producing crops or stock or both for market. From this list thirteen names were finally copied. After a careful reading of the definitions of the qualities for which the farmers were to be ranked the ranking was made. The thirteen farmers were ranked first on the point of "financial success." The one who seemed to be the most successful financially was marked number one; the one appearing least successful was numbered thirteen. Then the group was marked in the same way on the following points in order: "Native Intelligence," "General Education," "Agricultural Information," "Management Ability," "Field-Chore Skills," "Mechanical Ability,"

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[11] *Ibid.*

[12] Higbie, Edgar C., "An Objective Method for Determining Certain Fundamental Principles in Secondary Agricultural Education" (ND), Columbia University, New York.

"Business Ability," "Physical Capacity," "Unpaid Labor," "Community Value." The data were treated statistically and correlations were drawn between all combination pairs.

The writer found the following concerning the importance of the factors weighed:

Important	*Less Important*
Business ability	Physical capacity
Native intelligence	Mechanical ability
Technical Information	General education
Skills	

His general conclusions were as follows:

1. Managerial ability is vital to success in farming.
2. Business ability is hard to disassociate from managerial ability, probably because of common element.
3. Native intelligence seems to be a vital factor conditioning success.
4. Technical information undoubtedly has an important function in good farming.
5. Field and chore skills contribute directly toward success.
6. General education as usually understood in rural communities may not have any special attraction for the type of intelligence that seems to condition success.

Hofmeyer, Stephanus Johannes Gerhardus:[13] A Suggested Procedure in Setting up a Four-year Program in Vocational Agriculture for High Schools in the Transvaal, Union of South Africa. Thesis, Ph. D., 1931, Cornell University, 188 pp., Library, Cornell University, Ithaca, N. Y.

The purpose of the study was to set up a tentative scheme or procedure by which vocational education in agriculture might be introduced into high schools of the Province of Transvaal, Union of South Africa.

Recommendations were made that the teachers should receive special training for their work and become active in the agricultural affairs of the community; most of the time of the supervisor should be devoted to training teachers in the field; teachers should receive adequate reimbursement to encourage supervision of farm practice; farm practice should be substituted for school plots, and arrangements should be made for instruction in farm shop; organization of curriculum and direction of instruction should be carried out according to needs of pupils served, types of local farming, and practices of best farmers.

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[13] Summaries of Studies in Agricultural Education, p. 88, Bul. 180, 1935, Washington: U. S. Gov't Printing Office.

Wilson, Graham Eugene:[14] A study of Agricultural Conditions in North Dakota as a Basic Core of Content in the Course in Vocational Schools (1) For the State as a whole (2) For such Major Agricultural Divisions of the State as the study Reveals. Thesis, M. S., 1922, Cornell University. Library, Cornell University, Ithaca, N. Y.

The purpose was "to show how to make use of available data in preparing a course of study in vocational agriculture for secondary schools."

The study gives "Criteria for evaluating a core of content of a course in vocational agriculture for secondary schools of the State. Work should be selected which will represent the type of farming found in that region and be readily adapted to the needs of that region; provisions should be made for the development of knowledge needed to make a successful beginning in the farming of that region; the work should be organized so that it will be adapted to the abilities, needs and experiences of the students throughout the course." . . . .

A study was made by the writer in 1933 on "A Program of Agricultural Education for Adolescence in Lancaster County."

The purpose of the study was to formulate a program which would meet more adequately the problems now facing agriculture.

The following findings were among the more significant ones:

The increase in enrollment of freshmen for a period of nine years shows an average of over 10 per cent. annually.

There is a gradual upturn in the holding power of secondary schools in Lancaster County.

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[14] Summaries of Studies in Agricultural Education, pp. 180-181, Bul. 180, 1935, Washington: Gov't Printing Office.

Drop-outs of agricultural freshmen were 15 per cent. higher than the total drop-outs. Drop-outs of agricultural sophomores were 2.5 per cent. higher. Drop-outs of agricultural juniors were 5.7 per cent. less than the total drop-outs; and drop-outs of agricultural seniors 11.8 per cent. less than the total drop-outs.

Agricultural students are strongly inclined to remain in school after they have completed the second year and have begun the third year.

About 50 per cent. of the high school principals that responded to the questionnaire admit the need of agricultural education in their own community. About 40 per cent. agree that there would be sufficient patronage in their community to justify the existence of a department of agriculture.

Over 50 per cent. of the principals who responded recommended the establishment of several centers.

Transportation costs appear not to be cumbersome.

CHAPTER II

STATUS OF AGRICULTURE IN PENNSYLVANIA

Although about two centuries passed before any legislative action was taken in behalf of agriculture, it grew to be a major enterprise in Pennsylvania because of two basic factors, namely: the type of people and the vast resources that gave agriculture its impetus.

Pennsylvania was founded in 1681 by William Penn, a Quaker. In a publication by Penn, entitled "A Brief Account of the Province of Pennsylvania" (which was distributed widely in Great Britain and also translated into German to be distributed in South Germany), he described the advantages of his province as to climate, fertility of soil, abundance of forests, and other desirable features. Land could be purchased at the rate of five thousand acres for one hundred pounds sterling on agreeing to pay yearly to the proprietary one shilling rent for each one hundred acres.[1]

"In the early days agriculture was the chief occupation and the German farmers, especially of Lancaster County, were unsurpassed. Their skill, industry, and economy brought them great prosperity, and they contributed much to the material resources of the commonwealth . . . . "[2]

"The American Philosophical Society, founded in 1744 under the leadership of Franklin, in its earlier years published many articles on agricultural subjects but was developed chiefly as a scientific society. This led to the organization of the Philadelphia Society for Promoting Agriculture, in March, 1785, on the initiative of J. B. Bordley, a Maryland planter, by 23 distinguished citizens of that city. Its object was to promote a greater increase of the products of the land within the American States . . . ."[3]

"In 1794 the society endeavored without success to have the Pennsylvania Legislature incorporate a State society for the promotion of agriculture; connecting with it the education of youth in the knowledge of that most important art, while they are acquiring other useful knowledge suitable for the agricultural citizens of the State . . . ."[4]

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[1] Thomas, Allen C., A History of Pennsylvania, D. C. Heath & Co., N. Y., 1913, p. 24.

[2] *Ibid.*, p. 75.

[3] True, Alfred C., A History of Agricultural Education in U. S., 1785-1925, U. S. Gov't Printing Office, 1929, p. 7.

"Local and county agricultural societies continued to be organized and spread over the country with the progress of settlement westward. In 1852 it was estimated that there were about 300 organizations in the 31 States and five Territories, and in 1860 there were 941 agricultural organizations recorded in the books of the United States Agricultural Society. The movement to establish State societies proceeded slowly, but such societies were established during this period in Connecticut, Kentucky, Michigan, New Hampshire, Pennsylvania and Wisconsin.

"The first State horticultural society was formed in New York in 1818. Pennsylvania followed in 1828 . . . .

"In 1852 at a convention called by 12 State agricultural associations, the United States Agricultural Society was organized.

"Through meetings, fairs, correspondence, publications, and articles in the agricultural and other papers they sought to make the public feel that the interests of agriculture and farming population were entitled to more consideration by Congress and the State legislatures. They were increasingly active and influential in the efforts to establish State boards of agriculture, a national Department of Agriculture, the teaching of agriculture in schools and colleges . . . . . ."[5]

The historian Thomas says that the Legislature, moved by public opinion and by the example of other states, established, in 1882, a State Department of Agriculture, which has the care of dairy and food supplies and allied interests, and also the important subject of forestry.[6]

"Agriculture is the most important and most extensive single industry in Pennsylvania. Over 53 per cent. of the total area of the State is in farms, and about two-thirds of these farm lands are improved. Its soil is profitable for the growing of a great variety of products.

"The Pennsylvania farm is an interesting institution. Farm lands lie mostly in the eastern and central portions. They are noted for their attractive landscape features. Limestone soil, an aid to rich loam land, is plentiful in Pennsylvania. The skill with which the Pennsylvania farmer has managed his enterprise has been an admirable lesson in agricultural thrift to all the rest of America.

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[4] *Ibid.*, p. 8.

[5] *Ibid.*, pp. 23-24.

[6] Thomas, Allen C., A History of Pennsylvania, D. C. Heath & Co., N. Y., 1913, p. 289.

"Pennsylvania had 172,419 farms under cultivation in 1930. Although Pennsylvania is a great industrial state, its agricultural development represents a larger investment of capital than either manufacturing or mining.

"In order to make clear the meaning of the term 'farm' as it is given in statistical reports, the Fifteenth Census of the United States on Agriculture for Pennsylvania defines the term as follows: A 'farm' for census purposes, is all the land which is directly farmed by one person, either by his own labor alone or with the assistance of members of his household or hired employees. The land operated by a partnership is likewise considered a farm. A 'farm' may consist of a single tract of land, or a number of separate tracts, and these several tracts may be held under different tenures, as when one tract is owned by the farmer and another tract is rented by him. When a landowner has one or more tenants, renters, or managers, the land operated by each is considered a farm. Thus on a plantation the land operated by each cropper or tenant was reported as a separate farm, and the land operated by the owner or manager by means of wage hands likewise was reported as a separate farm. The enumerators were instructed not to report as a farm any tract of land of less than 3 acres, unless its agricultural products in 1929 were valued at $250 or more."[7]

The Bureau of Census reports a farm in the minor civil division and county in which the operating headquarters of the farm or ranch are located. This, in some instances, affects the figures for farm acreage as compared with the total land area, as a number of farms and ranches extend across the boundaries of minor civil divisions and counties and even across State lines.

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[7] Fifteenth Census of the U. S., 1930, U. S. Gov't Printing Office, Agriculture, Pa., p. 3.

The following table serves to show the extent to which farming is done, in terms of land area given to farming, in all the counties of Pennsylvania.

TABLE I. PERCENTAGE OF LAND AREA IN FARMS AND THE NUMBER OF FARMS IN EACH COUNTY OF THE STATE IN 1930[8]

Counties	% Farm	No. of Farms	Counties	% Farm	No. of Farms
Adams	78.2	3,333	Lancaster	85.9	9,705
Allegheny	40.9	2,935	Lawrence	70.9	2,236
Armstrong	58.0	2,663	Lebanon	70.3	2,203
Beaver	59.0	1,973	Lehigh	72.8	2,325
Bedford	64.8	3,184	Luzerne	30.5	2,385
Berks	70.7	5,359	Lycoming	37.6	2,710
Blair	42.6	1,608	McKean	18.8	1,081
Bradford	75.2	4,667	Mercer	74.7	3,967
Bucks	66.8	4,360	Mifflin	47.9	1,107
Butler	58.0	3,690	Monroe	33.8	1,370
Cambria	38.9	2,183	Montgomery	55.4	3,360
Cameron	8.4	190	Montour	81.5	695
Carbon	27.2	736	Northampton	68.3	2,707
Center	33.8	1,875	Northumberland	64.0	2,143
Chester	75.5	4,559	Perry	57.5	1,861
Clarion	56.2	2,164	Philadelphia	16.5	231
Clearfield	28.5	2,752	Pike	18.8	528
Clinton	16.7	913	Potter	34.2	1,564
Columbia	63.5	2,279	Schuylkill	36.8	2,502
Crawford	75.2	5,518	Snyder	70.1	1,596
Cumberland	70.4	2,932	Somerset	62.0	3,400
Dauphin	56.6	2,299	Sullivan	27.7	718
Delaware	40.2	689	Susquehanna	78.2	3,170
Elk	13.0	789	Tioga	58.0	3,168
Erie	77.5	4,885	Union	48.6	1,154
Fayette	48.7	3,364	Venango	38.3	1,776
Forest	14.9	337	Warren	35.1	1,999
Franklin	70.4	3,536	Washington	79.2	4,274
Fulton	65.3	1,195	Wayne	69.5	2,908
Greene	88.5	2,741	Westmoreland	57.5	4,712
Huntingdon	47.1	1,771	Wyoming	58.0	1,409
Indiana	59.0	3,058	York	83.5	7,649
Jefferson	47.9	2,450			
Juniata	56.3	1,319	Totals	53.4	172,419
Lackawanna	40.5	1,500			

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[8] Federal Census, 1930, Washington, D. C.

Without exception farming is done in every county. The percentage of land area in farms in 1930 and the number of farms in each county vary greatly throughout Pennsylvania. Cameron County shows only 8.4 per cent. of its land area in farms as compared with 85.9 per cent. in Lancaster County. The number of farms ranges from 190 in Cameron County to 9,705 in Lancaster County. Taking the state of Pennsylvania as a whole 53.4 per cent. of the land area is in farms. There are 172, 419 farms.

This table specifically sets forth the fact that Pennsylvania is an agricultural state despite the fact that it may be known as a great mining and manufacturing state.

TABLE II. CHANGES IN NUMBER OF FARMS AND VALUE OF FARM PROPERTY.[9]

Year	No. of Farms	Value of Farm Property in Dollars
1900 (June 1)	224,248	1,051,629,173
1910 (April 15)	219,295	1,253,274,862
1920 (January 1)	202,250	1,729,353,034
1925 (January 1)	200,443	1,460,702,270
1930 (April 1)	172,419	1,535,484,006

A study of the "Census Report of Changes in Number of Farms and Value of Farm Property"[10] in Pennsylvania shows that there has been a steady decline in number of farms from 1900 to 1930. The decline over a thirty year period amounted to approximately 23 per cent. Despite the great decrease in the number of farms, the value of farm property in Pennsylvania, on the contrary, shows a significant upward trend from 1900 to 1920. From 1920 to 1930 there was a decline in value of farm property but not as marked as the decrease in the number of farms. Strangely enough, the increase in value of farm property in 1930 over that in 1900 amounted to approximately 31.5 per cent.

Value of farm property as used here includes land and buildings, implements and machinery, domestic animals, chickens, and bees. When figures show increase in property values taking

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9. Fifteenth Census of the U. S., 1930.
10. *Ibid.*

place at the same time that the number of farms is decreasing, it appears that this increased property value must be a direct outcome of the development of farm specialties which call for adaptations in farm building and farm machinery.

The graph on the opposite page is designed to give a clearer picture of the trend concerning certain changes over a period of years.

The chart indicates the directions that changes in the number of farms on the one hand and the value of farm property on the other hand took during a period of three decades. The direction of change is significant, not the amount of change. This is true because the number of farms is shown in terms of thousands; the value of farm property is shown in millions of dollars.

TYPE COUNTIES IN PENNSYLVANIA

In response to a request made for suggestions for designing a method for the classification of the various counties in Pennsylvania into agricultural and non-agricultural types, George F. Johnson, State Chief of Agricultural Information answered:

"It is very doubtful that you will be successful in classifying counties into two groups — agricultural and non-agricultural. The county is too large a unit for such classification. You would be more successful in classifying townships on this basis, although even with this small unit you will have a great many areas on the border line."

In spite of these discouraging words the author feels it necessary to make some classification. He, therefore, has classified counties into three classes by placing all those counties in one list called *major agricultural* whose farming lands exceed 60 per cent. of the total area; those whose farming lands fall between 60 per cent. and 40 per cent. of the total land area are called *medium agricultural;* and those counties whose farming area comprises less than 40 per cent. of the total land area are called *minor agricultural.*

It must be remembered that such a division does not mean that farming in "minor agricultural" counties is a minor interest as far as those who engage in farming are concerned.

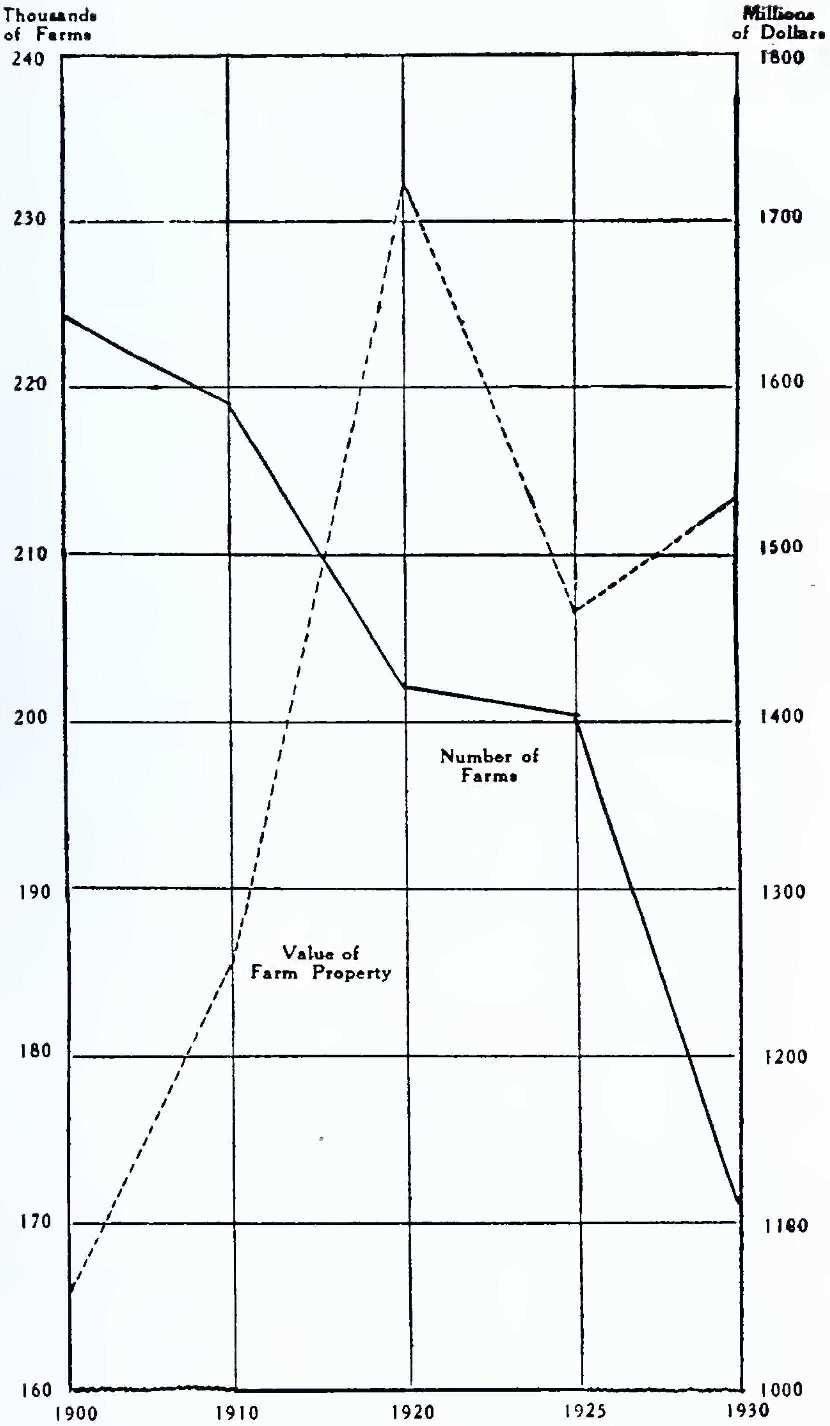

FIG. 1. Changes in Number of Farms and Value of Farm Property in Pennsylvania

TABLE III. CLASSIFICATION OF COUNTIES ACCORDING TO AREA OF LAND IN FARMS

Major Agricultural Over 60%	Medium Agricultural 60% to 40%	Minor Agricultural Less than 40%
Adams	Allegheny	Cambria
Bedford	Armstrong	Cameron
Berks	Beaver	Carbon
Bradford	Blair	Center
Bucks	Butler	Clearfield
Chester	Clarion	Clinton
Columbia	Dauphin	Elk
Crawford	Delaware	Forest
Cumberland	Fayette	Luzerne
Erie	Huntingdon	Lycoming
Franklin	Indiana	McKean
Fulton	Jefferson	Monroe
Greene	Juniata	Philadelphia
Lancaster	Lackawanna	Pike
Lawrence	Mifflin	Potter
Lebanon	Montgomery	Schuylkill
Lehigh	Perry	Sullivan
Mercer	Tioga	Venango
Montour	Union	Warren
Northampton	Westmoreland	
Northumberland	Wyoming	
Snyder		
Somerset		
Susquehanna		
Washington		
Wayne		
York		

The foregoing table and following map, however, are presented to show, by way of comparison, how large the groups in each case are. It will be noted that there are 27 counties out of the 67 counties whose land area in farms exceeds 60 per cent. of the total land area. There are 21 counties whose land area in farms falls between 40 per cent. and 60 per cent. of the total land area of the counties. There are 19 counties whose land area in farms falls below 40 per cent. of the total land area of those counties.

Obviously agriculture may then rightfully lay claim to a just share of the recognition accorded to schools by federal, state, and local governments.

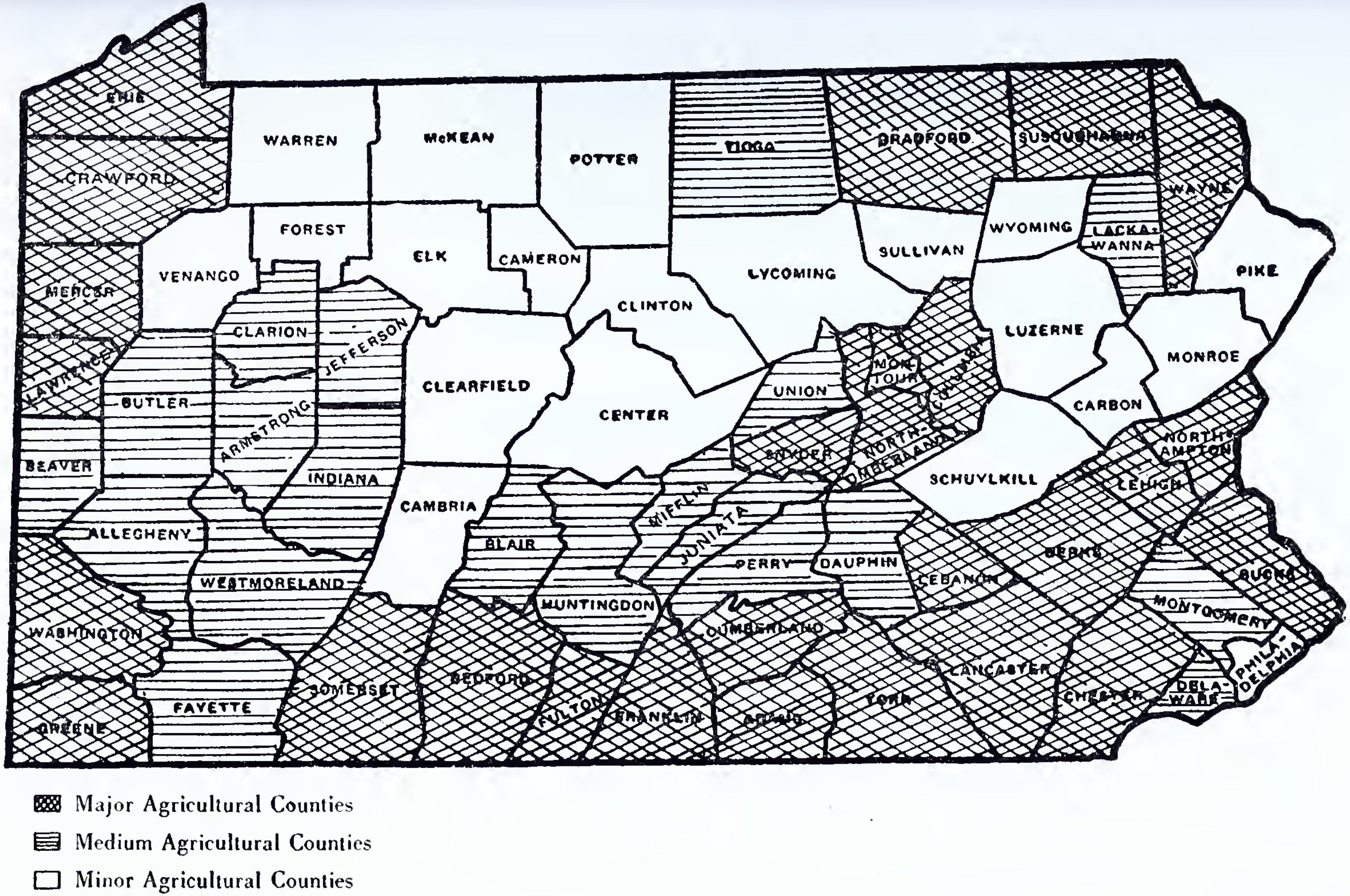

FIG. 2—Counties of Pennsylvania According to Agricultural Types

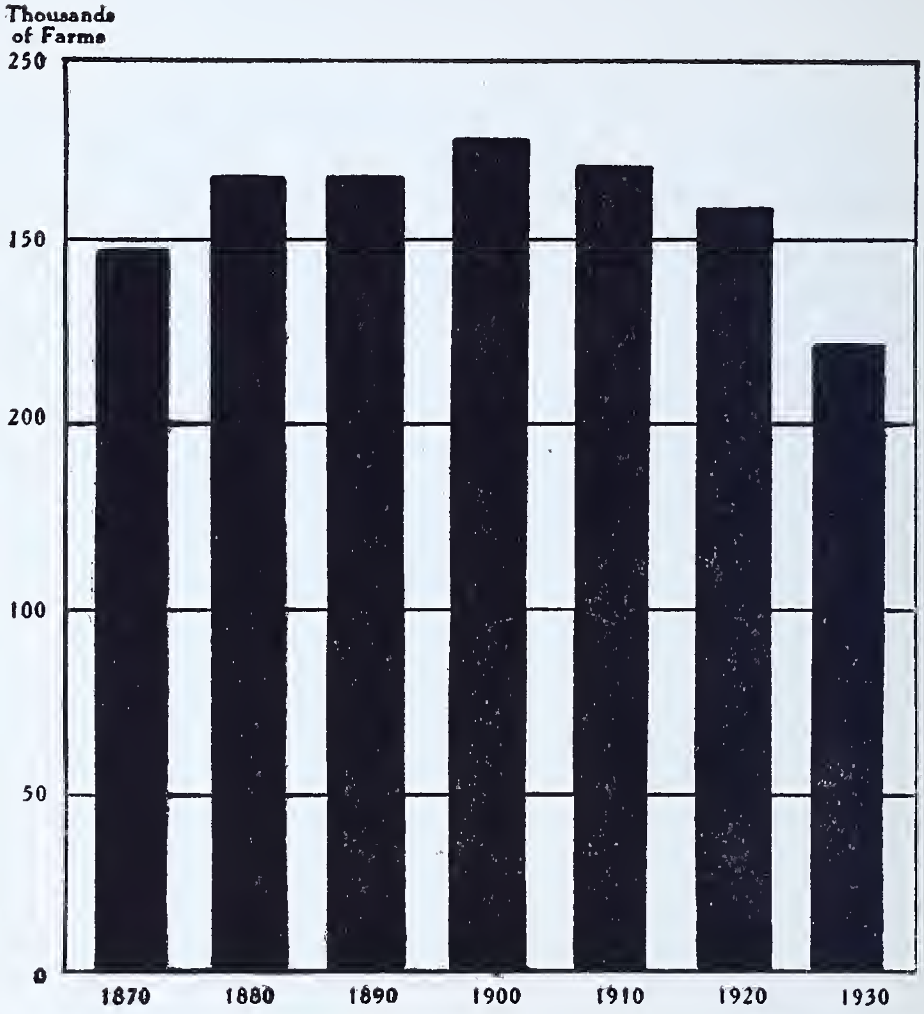

FIG. 3—Number of Farms in Pennsylvania

The above graph clearly indicates a decided decline in the number of farms in Pennsylvania since 1900. This may not be construed to mean that there is a correspondingly great decrease in farm land acreage. There is a probability that by combining a number of small farms the number of farms became less. This graph, however, indicates a decrease in number of farms despite increase in farm value within the last decade. The reader will note that at no time since 1870 has the number of farms been less than in the year 1930.

The following table is designed to present concretely the status of the various types of farming in Pennsylvania on the basis of the number of farms by tenure of operator. All the counties in the State are included. This table may be used as a guide in discovering major enterprises for each county. The figures are based on the 1930 United States Census on Agriculture. A few points that should be noted are that general farming leads in number of farms and that self-sufficiency farming and subnormal and unclassified farming claim a large proportion of the total number of farms.

TABLE IV. NUMBER AND TYPE OF FARMS BY TENURE OF OPERATOR BY COUNTIES[11]

County	General	Cash-grain	Crop specialty	Fruit	Truck	Dairy	Animal-specialty	Stock ranches	Poultry	Self sufficing	Subnormal and unclassified	Totals
Adams	1299	95	28	288	34	340	65	0	462	182	540	3333
Allegheny	730	10	29	50	421	532	21	0	291	213	638	2935
Armstrong	1035	36	36	7	15	393	36	0	198	431	476	2663
Beaver	446	11	24	61	25	495	19	0	112	243	537	1937
Bedford	1172	46	19	37	0	883	38	0	68	376	545	3184
Berks	1622	186	142	60	54	1278	79	0	524	499	915	5359
Blair	301	15	20	64	29	561	0	0	65	194	359	1608
Bradford	600	35	129	9	7	2597	39	0	520	189	542	4667
Bucks	896	68	118	28	241	1232	44	0	785	218	730	4360
Butler	1258	31	133	6	35	747	69	0	226	504	681	3717
Cambria	644	3	231	4	32	195	3	0	64	429	578	2183
Cameron	29	0	5	5	0	24	0	0	9	58	65	195
Carbon	293	8	77	14	4	72	0	0	52	74	142	736
Center	530	9	31	7	0	949	12	0	44	89	204	1875
Chester	635	134	357	40	42	2108	57	0	278	154	754	4559
Clarion	1078	39	24	4	0	308	66	0	89	321	239	2167
Clearfield	781	29	106	5	6	255	4	0	78	699	790	2753
Clinton	268	18	57	5	10	210	3	0	45	88	149	853
Columbia	1075	107	161	25	19	240	12	0	103	198	340	2280
Crawford	1183	34	196	4	25	2832	91	0	173	315	665	5518
Cumberland	1016	121	28	41	35	822	53	0	153	154	509	2932
Dauphin	960	84	38	26	36	416	67	0	140	234	298	2299
Delaware	85	4	25	13	44	155	23	0	39	28	273	689
Elk	214	0	39	0	0	101	3	0	22	213	197	789
Erie	938	28	285	512	102	1463	98	0	247	328	884	4885
Fayette	934	54	118	11	33	380	28	0	151	663	992	3364
Forest	73	0	9	0	0	27	0	0	8	128	92	337
Franklin	1209	266	48	133	16	1012	42	0	202	157	451	3536

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[11] Fifteenth Census of the U. S., 1930, Agriculture, Vol. III, Part I, "Type of Farm," pp. 267-271.

TABLE IV. NUMBER AND TYPE OF FARMS BY TENURE OF OPERATOR BY COUNTIES[11] (Continued)

County	General	Cash-grain	Crop specialty	Fruit	Truck	Dairy	Animal-specialty	Stock ranches	Poultry	Self sufficing	Subnormal and unclassified	Totals
Fulton	610	19	3	4	0	136	5	0	66	224	128	1195
Greene	862	15	29	8	10	182	531	29	78	493	504	2741
Huntingdon	645	13	18	15	4	420	48	0	36	313	259	1771
Indiana	1299	43	59	5	19	552	32	0	143	448	458	3058
Jefferson	935	29	119	3	0	339	14	0	59	443	509	2450
Juniata	533	16	18	5	0	333	12	0	144	89	169	1319
Lackawanna	281	0	52	18	35	600	0	0	105	116	291	1498
Lancaster	3728	96	2229	52	79	1097	463	0	594	291	1077	9706
Lawrence	468	14	26	17	26	860	24	0	105	243	453	2236
Lebanon	721	83	73	12	8	540	73	0	162	151	380	2203
Lehigh	732	85	637	28	30	205	18	0	158	119	313	2325
Luzerne	696	5	160	78	93	372	11	0	156	321	493	2385
Lycoming	998	92	54	24	35	853	21	0	68	269	296	2710
McKean	190	0	25	0	5	396	20	0	41	109	295	1081
Mercer	1249	0	82	20	10	1279	80	0	156	386	705	3967
Mifflin	391	36	4	6	4	374	6	0	94	52	140	1107
Monroe	372	11	39	4	14	246	15	0	93	211	365	1370
Montgomery	538	65	93	42	102	969	54	0	594	110	793	3360
Montour	335	58	0	0	3	151	3	0	16	47	141	754
Northampton	782	117	171	16	37	660	11	0	242	179	492	2627
Northumberland	1026	122	27	20	35	314	10	0	121	202	266	2143
Perry	700	71	21	11	0	371	41	0	190	170	286	1861
Philadelphia	14	0	4	0	117	0	0	0	4	0	79	218
Pike	88	0	0	0	3	0	0	0	61	125	166	440
Potter	357	4	178	0	0	0	0	0	29	155	192	915
Schuylkill	1079	30	207	32	11	0	3	0	184	283	462	2291
Snyder	744	58	5	32	0	0	17	0	141	125	193	1315
Somerset	1289	36	235	3	12	0	53	0	102	378	608	2716
Sullivan	229	0	11	0	0	0	5	0	33	115	97	490
Susquehanna	355	0	68	4	8	0	14	0	113	151	383	1096
Tioga	337	11	122	3	10	0	43	0	94	128	451	1199
Union	471	52	12	7	3	0	3	0	60	103	69	768
Venango	567	0	35	0	13	0	20	0	92	300	384	1411
Warren	339	3	56	4	7	871	12	0	113	183	411	1999
Washington	896	14	42	43	45	1380	267	0	193	390	1004	4274
Wayne	297	0	86	13	5	1617	0	0	334	185	371	2908
Westmoreland	1262	70	107	22	43	1142	64	0	259	654	1089	4712
Wyoming	196	0	20	35	14	691	6	0	106	106	235	1409
York	3045	315	333	142	89	802	131	0	1495	327	964	7643

The following table is a classification of counties on the basis of number of farms. The number of farms ranges from 190 in Cameron County to 9705 in Lancaster County according to the U. S. Census. The median number is 2204.5 and the semi-interquartile range is 954.6.

TABLE V. CLASSIFICATION OF COUNTIES OF PENNSYLVANIA ACCORDING TO NUMBER OF FARMS

No. Farms	No. Counties
0 - 500	5
500 - 1000	7
1000 - 1500	11
1500 - 2000	6
2000 - 2500	11
Median 2204.5	
2500 - 3000	9
3000 - 3500	5
3500 - 4000	3
4000 - 4500	2
4500 - 5000	4
5000 - 5500	1
5500 - 6000	1
6000 - 6500	0
6500 - 7000	0
7000 - 7500	0
7500 - 8000	1
8000 - 8500	0
8500 - 9000	0
9000 - 9500	0
9500 -10,000	1
Total	67

There are at least as many farm operators as there are farms. According to the census definition, a farm operator is a person who operates a farm either by performing the labor himself or directly supervising it.

Any tract of land less than three acres, unless its agricultural products in 1929 were valued at $250 or more, was not considered a farm by enumerators.

The writer believes it is safe to assert that one may reasonably count on the number of operators being greater than the number of farms and that each county, according to the median for number of farms, may claim over 2000 people directly interested in and dependent upon farming.

On the basis of the number of farms in the 67 counties of Pennsylvania the author found that five counties register less than 500 farms and that one county registers over 9700 farms. The median for all counties of Pennsylvania is 2204.5 farms.

FARM OWNERSHIP AND TENANCY IN PENNSYLVANIA

In his book entitled "Rural Sociology"[12] John Morris Gilette points out that the typical American tenant system tends to defertilize the soil, and so to lessen farm and national production. And also it tends toward rapid deterioration of farm buildings and other farm improvement. And again, it tends to undermine community spirit.

TABLE VI. EFFECT OF LAND TENANCY ON AVERAGE YIELD[13]

Crop	Owner	Yield Under Part Owner	Tenant
Corn	38.8 bu.	36.3 bu.	32.9 bu.
Wheat	18.8 bu.	17.2 bu.	17.4 bu.
Oats	33.2 bu.	28.3 bu.	23.4 bu.
Cane	2.5 tons	2.4 tons	2.6 tons
Corporea Hay	1.15 tons	1.08 tons	.88 tons
Timothy	1.03 tons	1.01 tons	1.07 tons
Clover	1.00 tons	.97 tons	.91 tons
Mixed Hay	1.11 tons	1.05 tons	1.16 tons

Over a period of three decades, statistics show that tenancy is on the decline in Pennsylvania. The proportion of farms operated by all tenants has decreased from 26 per cent. in 1900 to 15.9 per cent. in 1930. The number of farms has decreased from 224,248 in 1900 to 172,419 in 1930. The production from the farms in terms of value of products has been increasing during the same period that the number of farms has been decreasing. The probability appears great that the decrease in tenancy may have contributed materially to the increase in production, through more efficiency resulting from operation of farms by owners.

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[12] Gilette, John Morris: Rural Sociology, The Macmillan Co., N. Y., 1926, p. 278.

[13] Missouri Experiment Station Bulletin No. 121, Reproduced in Source, Agricultural Economics, p. 249 (Gilette).

In a previous study the author examined the problem of "Farm Ownership and Tenancy" as it existed in the leading agricultural county in the State; namely, Lancaster County, for 1910, 1920, and 1930. Facts show that tenancy was about 4.3 per cent. higher in 1920 than in 1910 but returned to .6 per cent. lower in 1930 than in 1910. The last census shows a favorable trend regarding ownership.

TABLE VII. TYPE OF FARM, NUMBER AND PER CENT. OF FARMS BY TENURE OF OPERATOR IN PENNSYLVANIA[14]

Type of Farm		Full Owners	Part Owners	Managers	Tenants Total	Cash Tenants	Other Tenants	Total
1. General Farms	No.	39,897	2508	620	7934	2100	5834	50959
	%	78.3	4.9	1.2	15.6			100
2. Cash-grain Farms	No.	1564	101	162	1227	148	1079	3054
	%	51.2	3.3	5.3	40.2			100
3. Crop-Specialty Farms	No.	5555	459	182	1777	376	1401	7973
	%	69.7	5.7	2.3	22.3			100
4. Fruit Farms	No.	1682	94	210	189	61	129	2175
	%	77.3	4.3	9.7	8.7			100
5. Truck Farms	No.	1493	168	32	501	416	85	2194
	%	68.0	7.7	1.5	22.8			100
6. Dairy Farms	No.	33,647	2900	651	8182	2701	5481	45380
	%	74.1	6.4	1.4	18.1			100
7. Animal-Specialty Farms	No.	2300	208	127	467	145	322	3102
	%	74.1	6.7	4.1	15.1			100
8. Stock-ranches	No.	17	7	1	4	1	3	29
	%	58.6	24.1	3.5	13.8			100
9. Poultry	No.	10,660	343	117	862	492	370	11,982
	%	89.0	2.8	1.0	7.2			100
0. Self-sufficing Farms	No.	14,112	519	0	1442	769	673	16,073
	%	87.8	3.2	0	9.0			100
1. Subnormal and unclassified Farms	No.	23,496	553	640	4808	2902	1906	29,497
	%	79.7	1.9	2.1	16.3			100
Totals	No.	134,423	7860	2742	27,393	10,111	17,283	172,418
	%	77.9	4.6	1.6	15.9			100

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[14] Data based upon 1930 U. S. Census.

The reader will note that in no case do the farms, which fall in the full ownership class, fall below 51.2 per cent. of the total number of farms. The number of full owner farms in the various types of farming ranges from 89 per cent. in the poultry-farm class to 51.2 per cent. in the cash-grain farm class.

Not only does this study show that ownership exceeds all other forms of farm operation, but it also shows that certain types of farming tend to encourage and facilitate ownership more than other types. Poultry farming shows the greatest proportion of full ownership. A close second to poultry farms are self-sufficing farms which show 87.8 per cent. of the farms as being operated by full-owners. The other types of farms operated by full-owners appear in the following order based on the proportion full-ownership farms bear to the total number of farms: subnormal and unclassified farms, 79.7 per cent.; general farms, 78.3 per cent.; fruit farms, 77.3 per cent.; dairy farms, 74.1 per cent.; animal-specialty farms, 74.1 per cent.; crop-specialty farms, 69.7 per cent.; truck farms, 68 per cent.; stock-ranches, 58.6 per cent.; and cash-grain farms, 51.2 per cent.

As one would expect, cash-grain farms lead in tenancy since 40.2 per cent. of all farms operated by tenants are cash-grain farms. Truck farms represent 22.8 per cent. of all farms operated by tenants. The rest follow in order: Crop-specialty farms, 22.3 per cent.; dairy farms, 18.1 per cent., subnormal and unclassified farms, 16.3 per cent.; general farms, 15.6 per cent.; animal-specialty farms, 15.1 per cent.; stock-ranches, 13.8 per cent.; self-sufficing farms, 9 per cent.; and poultry farms, 7.2 per cent.

The order for the various types of farming for part-ownership is as follows: stock-ranches, 24.1 per cent.; truck farms, 7.7 per cent.; animal-specialty farms, 6.7 per cent.; dairy farms, 6.4 per cent.; crop-specialty farms, 5.7 per cent.; general farms, 4.9 per cent.; fruit farms, 4.3 per cent.; cash-grain farms, 3.3 per cent.; self-sufficing farms, 3.2 per cent.; poultry farms, 2.8 per cent.; subnormal and unclassified farms, 1.9 per cent.

The order of the various types of farming for managers operating farms is as follows: fruit farms, 9.7 per cent.; cash-grain farms, 5.3 per cent.; animal-specialty farms, 4.1 per cent.; stock-ranches, 3.5 per cent.; crop-specialty farms, 2.3 per cent.; subnormal and unclassified farms, 2.1 per cent.; truck farms, 1.5 per cent.; dairy farms, 1.4 per cent.; general farms, 1.2 per cent.; poultry farms, one per cent. The table shows no managers for self-sufficing farms.

A summary of the proportion of operators classified as full-owners, part owners, managers and tenants when all types of farming are taken together, shows 77.9 per cent., 4.6 per cent., 1.6 per cent., and 15.9 per cent., respectively. A rather favorable condition seems to exist regarding the status of ownership. Taking together all those farms operated either by full owners or part owners, we find that 82.5 per cent. of all the farms fall within this group. Only 15.9 per cent. are classified as farms operated by tenants, while the proportion of farms operated by managers is very low. The 1930 census reveals that Pennsylvania has 15.9 per cent. tenancy.

The significance of tenancy for agriculture must not be overlooked. Gilette's study shows that there is a definite loss in farming done by tenants as compared with farming done by owners.

"Opponents (to tenancy) contend that when the growth of farm tenancy outstrips the growth of home ownership, the move to produce efficiently is lost. In support of this view, it is pointed out that more than four-fifths of all tenants stay on a single farm less than five years, while about one-third remain less than a year. Thus, it is asserted, any incentive to improve the land is stifled; the soil is depleted and the tenant moves on."[15]

Pennsylvania has the problem of reducing the 22.1 per cent. of all operators, who are not full owners, to a minimum. Both economy and efficiency can be expected with the shift from tenancy to ownership.

It has already been pointed out that farm values in crops and livestock are increasing. There seems to be, therefore, a definite relationship between increase in farm values and decrease in

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15. Farm Tenancy, "The Nation Acts to Stem Its Growth," Pathfinder, Washington, D. C., Nov. 28, 1936, p. 11.

tenancy. Agricultural education should seek to educate for ownership.

Subsequent studies in this thesis will show what agricultural education proposes to do for the farm boy and farming. Since agricultural education seeks to strengthen the attitude of the boy toward farming as a future business, it is believed that this will mean increased ownership which in turn will reduce tenancy. Thus agricultural education may contribute directly to the desirable outcome of increased ownership and decreased farm tenancy.

THE STATUS OF PERSONS ENGAGED IN AGRICULTURE

Ever since the beginning of our national history Pennsylvania showed a rapid rise in population as shown by each census. Today Pennsylvania has the distinction of ranking second in population among the states. Its population approximates 10 million or about 8 per cent. of the total population of the United States.

"In 1790 the population of Pennsylvania was 434,373. In 1930 it averaged 214.8 persons per square mile, which is almost five times the average for the whole United States, exceeded in only five other states in the Union. In 1930 there were about 30 million families in the entire United States. In that year the number of families in Pennsylvania totaled over 2,200,000. The average number per family is 4.3. The total number of Pennsylvania homes is 1,537,258 urban; 184,151 farm; 514,211 rural non-farm."[16]

Thus one can see that agriculture, as one of the most important enterprises in the State, may rightfully claim recognition according to the number of people dependent upon agricultural products.

The following table shows shifts in population for 1920-1930 for both rural and urban classes.

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[16] See 1930 United States Census Report.

TABLE VIII. URBAN AND RURAL POPULATION, 1920-1930[17]

Total	8,720,017	9,631,350
Urban	5,607,815	6,533,511
Rural	3,112,202	3,097,839
Farm	941,360	846,240
Non-farm	2,170,842	2,251,599
Per cent. Urban	64.3	67.8
Per cent. Rural	35.7	32.2
Per cent. Farm	10.8	8.8
Cities 100,000 or more	2,657,689	2,991,349
25,000 to 100,000	879,658	1,113,014
10,000 to 25,000	889,740	1,157,990
5,000 to 10,000	670,916	734,549
2,500 to 5,000	509,812	536,609
Rural 1,000 to 2,500	380,693	354,449
Under 1,000	199,231	204,178
Other rural	2,532,278	2,539,212

The reader will observe that while the per cent. which the urban population is of the total population changed from 64.3 to 67.8, the rural and farm populations showed a decline of 3.5 per cent. and 2 per cent. respectively. This condition merely goes to show the continually growing responsibility of the farm group whose labor and products are indispensable to the progress of all other occupations and industries in the State.

The reader may ask, "What significance do these facts have in regard to a program of agricultural education?" At this point, suffice it to say that the factor of population-trends becomes a controlling factor in formulating a program that not only answers the need of the farming class but also the need of the classes whom the farmer serves. Agriculture must adjust its program of production to the program of the consumer whose demands he must meet and satisfy. The demand is largely controlled by the factor of population.

In order to get a clear picture of the status of agriculture, the population it claims is compared with nine other leading occupations and industries in the State of Pennsylvania. All industries and occupations in Pennsylvania used in this comparative list

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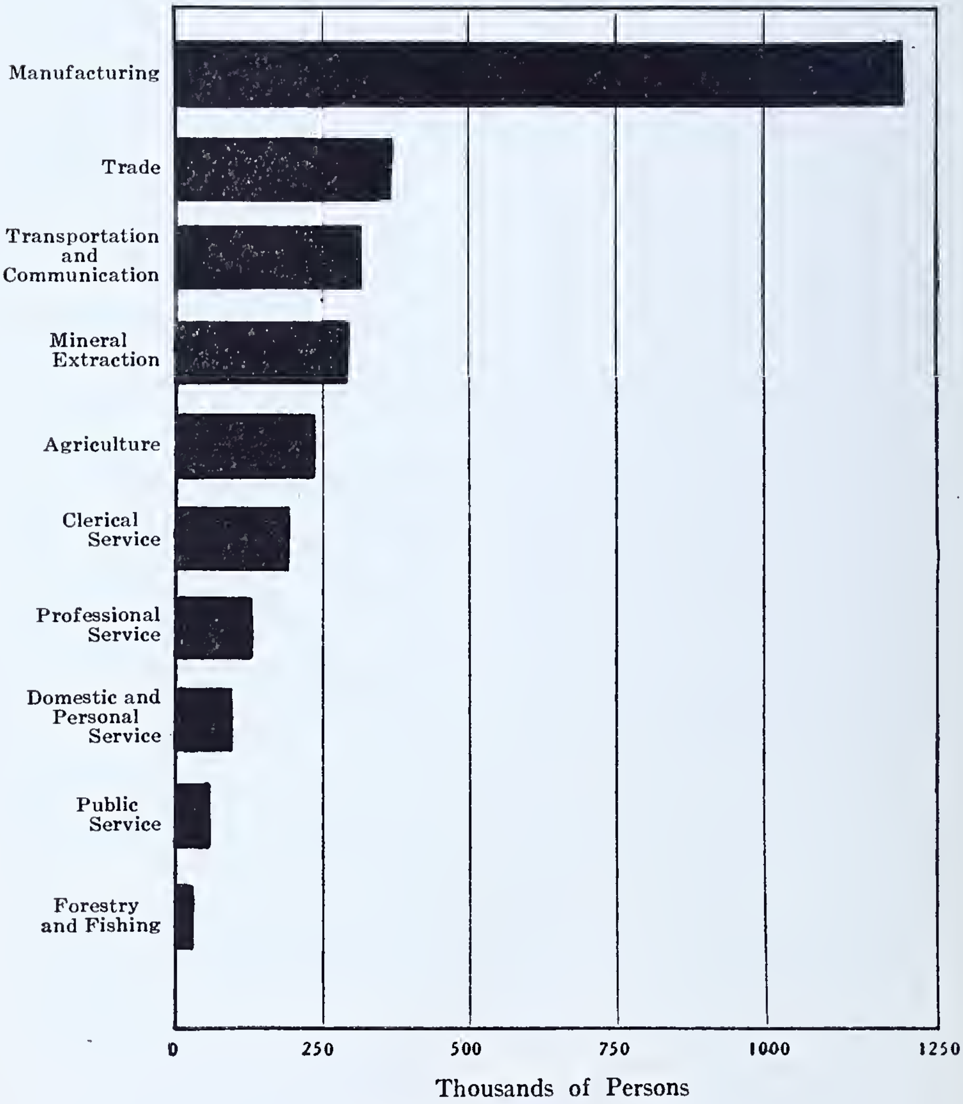
17. 1930 United States Census Report.

claim 2,918,211 workers. Agriculture stands fifth among them with 243,850 while manufacturing leads with a group of workers totaling 1,203,772.

FIG. 4—OCCUPATIONAL CLASSIFICATION, PENNSYLVANIA, 1930



EXTENT OF MIGRATION

"Information relative to the movement of population as affecting the farm population was sought for the first time in the census of 1930, through two questions which appeared on the general farm schedule, as follows:

1. How many persons make their home on this farm who have moved here from a city, village, or other incorporated place during the last twelve months?

2. How many persons who now make their home in a city, village, or other incorporated place have moved there from this farm during the last twelve months?

"In securing answers to these questions, enumerators were instructed to omit movements of students, persons on a visit, and laborers staying on the farm only a short time."[18]

The available statistics submitted on movement of farm population represent only one year, April 1, 1929, to March 31, 1930. These figures cannot be used in interpreting trends. They are of some value in recognizing, however, that the importance of the farming industry becomes apparent during times of stress. Persons reported moving to farms numbered 21,167 while persons reported moving from farms numbered 12,454.

A few observations may be called to the reader's attention. There are six counties out of the 67 that show a greater number moving from the farm than to the farm in the year 1929 to 1930. Among the 60 counties showing more moving to the farm than from the farm, 26 counties report no centers of agricultural education. Of the six reporting the opposite, four have no centers of agricultural education. Approximately 167 centers of agricultural education are reported for the year 1929 to 1930. The total amount of land in farms for 1930 amounts to 15,309,485 acres, which means that there is an approximate average of 91,673 acres to one agricultural education center.

SUMMARY OF THE STATUS OF AGRICULTURE IN PENNSYLVANIA

The foregoing chapter reveals the status of farming in Pennsylvania.

In the early days, agriculture was the chief occupation. The primary interests of the early Pennsylvanians were agricultural.

The Legislature, moved by concerted public opinion and influenced by other states, established a State Department of Agriculture in 1882. The interests of the Department at that time, however, were not nearly as broad and varied as at the present time.

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[18] Fifteenth Census of the U. S., 1930, p. 4.

From the standpoint of financial investment agriculture is the most important and most extensive single industry in Pennsylvania, which is a state of crop specialties and animal husbandry specialties.

Farm lands lie mostly in the eastern and central portion. Farming, however, without exception is carried on in every county.

Pennsylvania had 172,419 farms under cultivation in 1930. Agriculture represents a larger investment in capital than either manufacturing or mining.

The number of farms and the area of land in farms per county throughout the state vary widely.

Despite the consistent decrease in number of farms from 1900 to 1930, the value of farm property shows no similar decline, but only a temporary decline which changed to an increase in value between 1925 and 1930. The increase in value of farm property in 1930 over that in 1900 amounted to approximately 31.5 per cent. The decrease in number of farms between 1900 and 1930 amounted to about 23 per cent.

An arbitrary classification of counties into major agricultural, medium agricultural, and minor agricultural groups shows 27 belonging to the first group, 21 belonging to the medium group, and 19 belonging to the minor group. The farming situation in Pennsylvania for the years 1870 to 1930, according to the U. S. Census, shows 1900 as having been the peak period for number of farms and 1930 as having fewer farms than at the time of any previous census.

The number of farms by counties ranges from 190 to 9,706. There are five counties having fewer than 500 farms and only four having more than 5000. The median for all the counties is 2204.5 farms.

The counties in which agriculture may be considered a minor enterprise in Pennsylvania are few.

There are farms of less than five acres and others over 500 acres. Ownership and tenancy both share a large place in both large and small farms.

The typical tenant system tends to defertilize soil and so lessens production.

Tenancy is on the decline in Pennsylvania. It has been reduced from 26 per cent. in 1900 to 15.9 per cent. in 1930.

The percentage of all farms operated by full owners in 1930 amounted to 77.9 per cent.; 4.6 per cent. were operated by part-owners; 1.6 per cent. were operated by managers; 15.9 per cent. were operated by tenants.

Out of a total of 172,418 farms 134,423 were operated by full owners and 27,393 by tenants.

All those who share in the experience of ownership, control and operate 82.5 per cent. of all the farms.

Pennsylvania's population is about 8 per cent. of the total population of the United States. In 1930 it averaged about 214.8 persons per square mile.

The average number per family is 4.3 persons. The total number of Pennsylvania homes is over 1½ million. Of these 184,151 are farm homes, or about 12 per cent.

The decade from 1920 to 1930 shows a small decline for total rural population. For non-farm population there is a small increase from 64.3 per cent. to 67.8 per cent. For farm rural population there is a decline from 35.7 per cent. to 32.2 per cent.

Agriculture in Pennsylvania stands fifth, as regards population, among ten major industries. Manufacturing, trade, transportation and communication, and mineral extraction exceed agriculture. From a total of 1,203,772 workers farming claims 243,850.

From 1929 to 1930 there was a back-to-the-farm movement as shown by the 1930 census report. The information available regarding extent of migration is very limited.

Facts show that the greatest single industry in point of investment rests upon the shoulders of the farmers, about 8.8 per cent. of the total population.

About 2.8 per cent. of the total farm population of the U. S. is located in Pennsylvania.

CHAPTER III

DEVELOPMENT OF AGRICULTURAL EDUCATION IN PENNSYLVANIA

Historical Background

The history of the development of agricultural education on the high school level of today has its roots in the movements sponsored and promulgated by a committee of the Pennsylvania Legislature, dating back to 1837, which declared that agriculture "must in some way be interwoven with our system of education." Before that, agriculture was an enterprise not to be associated with the school systems and formal education. This committee also suggested the establishment of an agricultural school and a pattern farm.

"Under the leadership of the 'Philadelphia Society for Promoting Agriculture,' a convention held at Harrisburg, January 21, 1851, organized the State Agricultural Society. During that year a letter from W. D. Brinckle drew the attention of the society to the desirability of establishing an agricultural school, and on January 18, 1853, the society indorsed the proposition of Gov. William Bigler for the establishment of such an institution. A committee appointed to consider the expediency of creating a school to be called 'The Farmer's High School of the State of Pennsylvania' reported in favor of holding a convention of delegates from agricultural societies and other friends of agricultural education. This convention met at Harrisburg, March 8, 1853, unanimously favored the establishment of a school for the education of farmers, and appointed a committee of appeal to the Legislature. A plan for the school was presented to the State society January 20, 1854, by Frederick Watts, and the matter was put before the Legislature with the result than an act was passed April 13, 1854, incorporating an institution with that name. This was to be 'an institution for the education of youth in various branches of science, learning, and practical agriculture as they are connected with each other.' The act provided that President and Vice-President of the Pennsylvania State Agricultural Society and the presidents of the several county agricultural societies were to be ex-officio members of and constitute the

Board of Trustees. The principal shall be a good practical farmer with whatever scientific attainments the board shall deem necessary. The school was to have a farm of at least 200 acres, but the income from its property was not to exceed $25,000. The State Agricultural Society might make an initial appropriation of $10,000 to the school and other sums annually. This act was found defective in some respects. . . . . . .

"A substitute act of February 23, 1855, was therefore passed at the request of the State society, in which the number of trustees was limited to thirteen, including the Governor, Secretary of State, the President of the Pennsylvania State Agricultural Society and the principal of the school, ex-officio, and nine other persons named in the act, among whom was Frederick Watts. He was chosen to be the first president of the board. He was a graduate of Dickinson College, had been the first president of the State Agriculture Society, and in later years was United States Commissioner of Agriculture.

"In 1855 the Legislature gave the school $10,000 and the State Agricultural Society undertook to raise an equal amount. The trustees considered various propositions for the location of the school and accepted General Irvin's donation of 200 acres of land in Centre County. They also leased an adjoining 200 acres with privilege of purchase at $60 an acre, which was afterwards done. . . . .

"On Feburary 16, 1859, the school was opened. In the first catalog issued in 1859, it is stated that—the object of the *'Farmers' High School of Pennsylvania' is to afford a system of instruction as extensive and thorough as that of the usual course in our best colleges, but to differ from the latter in devoting no time to the study of the ancient languages, and in devoting a correspondingly longer time to scientific instruction; most particularly is it desirable to develop and adopt a system of instruction which shall embrace to the fullest extent possible those departments of all sciences which have a practical or theoretical bearing upon agriculture and agricultural interests. . . .

"After 1862 the undergraduate course was made more elabor-

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* Now Pennsylvania State College.

ate, particularly as regards the sciences and mathematics, provision was made for graduate courses, while at the same time a 'partial scientific and practical course' was arranged for those students 'who were incapable of making progress in mathematical studies' and a short 'practical course' for those students of limited education who desired to get some benefit from the study of agriculture at the college."[1]

"In 1893 the Office of Experiment Stations in the United States Department of Agriculture began to take a definite interest in agricultural education below the collegiate grade, as is shown by the report of the director of the office for that year and the year 1894. In an article on popular education for the farmer in the Yearbook of the United States Department of Agriculture for 1897, after calling attention to the secondary schools of agriculture in Minnesota and Alabama, and commending the establishment of such schools, the Director of the Office of Experiment Stations said:

> But it is not believed that these special agricultural high schools will fully meet the needs of our farmers for agricultural instruction of this grade. Any school so distant from the farmer's home as to necessitate long journeys and residence at the school for two or more years must necessarily be too expensive for most of the farmer's children, especially after they have reached an age when their services may be more or less utilized on the farm. What is needed is courses in agriculture in numerous schools to which farmers' children can resort, near to their home, to "finish" their education after they are through with the common schools. . . .

The more favorable economic conditions of agricultural colleges, the great growth of the farmers' institutes, and other causes helped to promote the movement for secondary education in agriculture, and made great advances during the first decade of the twentieth century.

"After 1900 the movement for secondary education in agriculture developed rapidly and broadly. It was promoted by Federal, State, County, and local agencies . . . . Much of the work done

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1. True, Alfred C., "A History of Agricultural Education in the United States, 1785-1925, U. S. Printing Office, pp. 67-71.

2. *Ibid.*, pp. 329-330.

by the agencies and institutions interested was necessarily tentative and experimental."[2]

"When the United States Bureau of Education made a survey of the status of secondary education in agriculture in 1916, it found that secondary instruction in agriculture was given in the following classes of institutions:"[3]

1.	Secondary schools of agriculture at State agricultural colleges	28
2.	Public normal schools (not including 27 county teacher-training schools in Wisconsin)	124
3.	Special agricultural schools receiving state aid	74
4.	Vocational agricultural departments in public high schools under state supervision	421
5.	Public high schools not state aided	2760
6.	Private agricultural secondary schools	12
7.	Private secondary schools (note special)	149
8.	Secondary and higher schools for negroes	107
	Total	3675

On February 23, 1917, the Smith-Hughes Vocational Education Act was approved by President Wilson. It is permanent legislation and provides large amounts of money granted by the Federal government for instruction in agriculture, home economics, and the trades and industries. It is granted for the education of children over fourteen years of age, thus providing funds for these types of instruction for education below college grade.

"The Smith-Hughes Act does not provide for the education of backward, deficient, incorrigible, or otherwise subnormal individuals."[4]

The history of the movements in agricultural education impresses the reader with two outstanding tendencies, namely, that agricultural education gained its recognition through legislative action and was promoted first by institutions of higher education.

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[3] *Ibid.*, p. 355.
[4] *Ibid.*, p. 372.

Now we come to the period, beginning with 1917, when agricultural education, "below the level of college grade," is placed within reach of the adolescent boy. All the states may benefit by the Act of 1917. In order to receive these benefits a satisfactory arrangement must be made with the Federal government by the State governments.

In 1929, on the fifth day of February, the George-Reed Act was passed which provided for further aid to agricultural education. The administration of this aid is subject to the same provisions as set up in the Smith-Hughes Act of 1917. The act is as follows:

"That for the purpose of providing for the further development of vocational education in the several States and Territories there is hereby authorized to be appropriated for the fiscal year ending June 30, 1930, the sum of $500,000 and for each year thereafter, for four years, a sum exceeding by $500,000 the sum appropriated for each preceding year. One-half of such sums shall be allotted to the States and Territories in the proportion that their farm population bears to the total population of the United States, exclusive of the insular possessions, according to the United States Census last preceding the end of the fiscal year in which any such allotment is to be made, and shall be used for the salaries of teachers, supervisors, and directors of agricultural subjects in such States and Territories. The remaining half of such sums shall be allotted to the States and Territories in the proportion that their rural population bears to the total rural population of the United States, exclusive of the insular possessions, according to the United States Census last preceding the end of the fiscal year in which any such allotment is to be made, and shall be used for the salaries of teachers, supervisors, and directors, development and improvement of home economics subjects in such States and Territories."

PRESENT STATUS

The most recent legislation in support of vocational education was the passage of "The George-Deen Law"[5] approved June 8,

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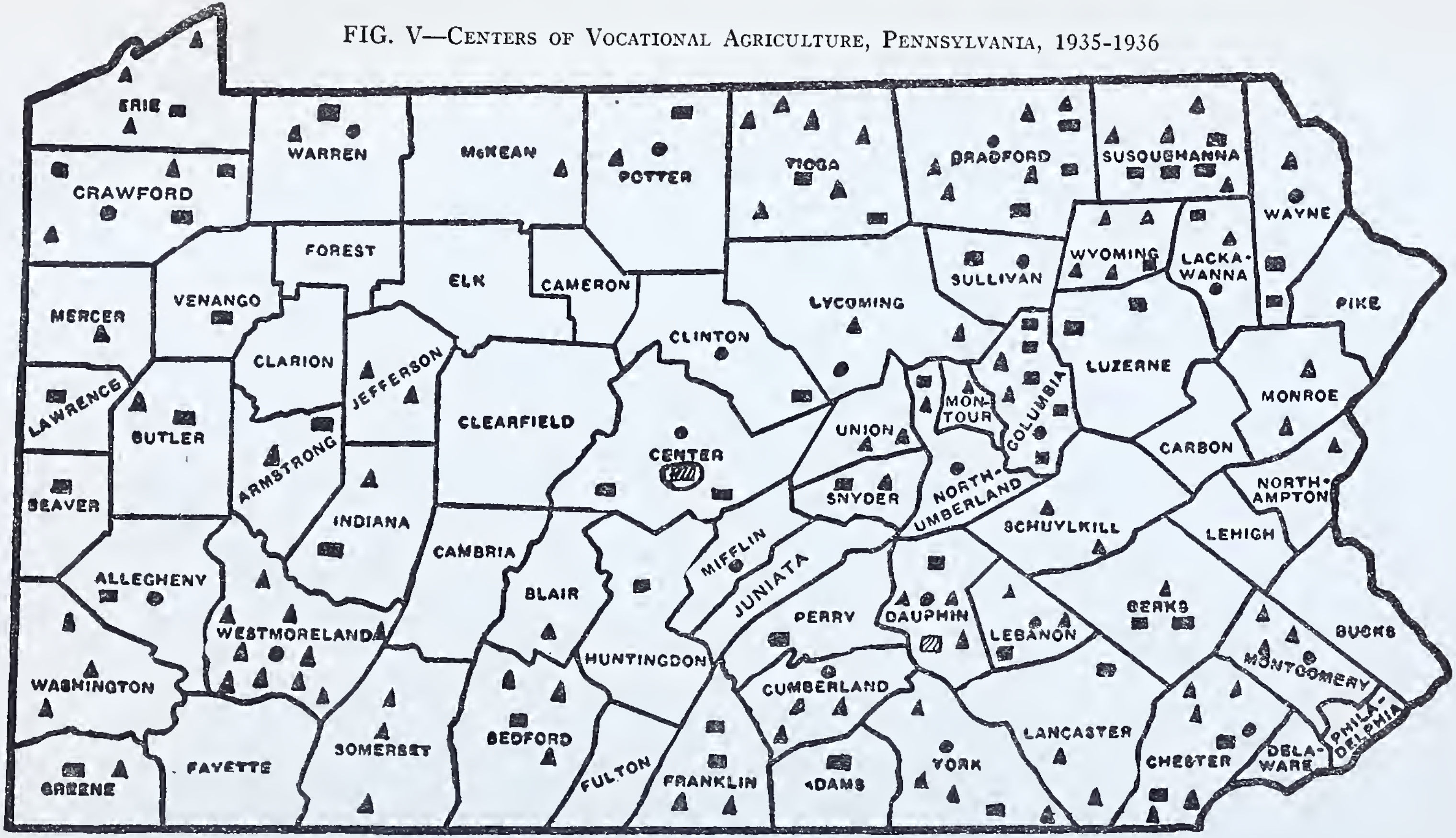
[5] "The George-Deen Law," American Vocational Association Journal, Vol. XI (September, 1936), p. 163.

FIG. V—Centers of Vocational Agriculture, Pennsylvania, 1935-1936



●	Location of Agricultural County Advisors, Schools Served	129
▩	Vocation Schools	58
▲	Schools With Vocational Departments	90
	Total	277

▨ Harrisburg—Administrative Center (Dauphin County)

⊘ State College—Teacher Training Center

1936. The law provides for the further development of vocational education in the several States and Territories. It provides for the appropriation of the sum of $12,000,000 for the fiscal year beginning July 1, 1937, and annually thereafter provided that the several States and Territories shall be required to match by State or local funds or both 50 per centum of the appropriations authorized under the provisions of this section until June 30, 1942, 60 per centum for the year ending June 30, 1943, 70 per centum for the year ending June 30, 1944, 80 per centum for the year ending June 30, 1945, 90 per centum for the year ending June 30, 1946, and annually thereafter 100 per centum of the appropriations authorized under the provisions of this section. One-third of this sum each year shall be allotted to the States and Territories in the proportion that their farm population bears to the total farm population of the United States and Territories, according to the United States census last preceding the end of the fiscal year in which any such allotment is made, and shall be used for the salaries and necessary travel expenses of teachers, supervisors, directors of agricultural subjects in such States and Territories.

The foregoing map (Fig. 5) shows the number and type of agricultural education centers for the year 1935-1936. The reader will note that development has been irregular. The centers cluster around certain communities. In several counties where agriculture is a major enterprise, it is not taught. A number of counties are benefiting greatly by a well-planned program of vocational education.

Centers of Vocational Agriculture in Pennsylvania are classified as: (1) schools in which agriculture is taught by a county advisor; (2) vocational schools; and (3) schools with vocational departments.

The following graph (Fig. 6) representing a 15-year period shows the conditions regarding enrollment. There has been considerable fluctuation in the enrollment in county supervisors' classes. On the other hand there has been, with only a few exceptions, a continual and decided increase in enrollment in vocational schools and schools with vocational departments. This may

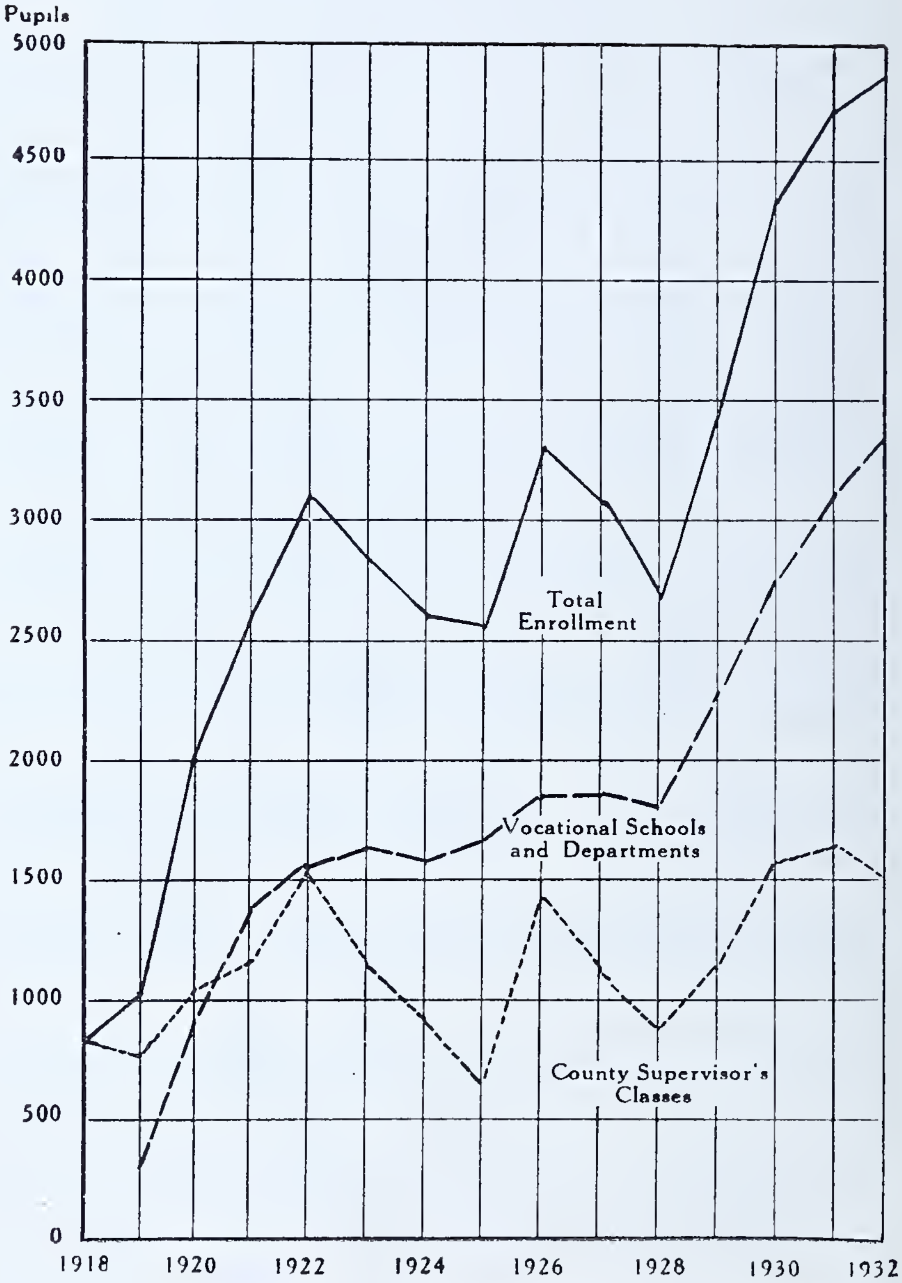


FIG. 6—ENROLLMENT IN VOCATIONAL AGRICULTURAL EDUCATION, PENNSYLVANIA, 1918-1932

be explained in part by the fact that the business of vocational county advisors is to encourage and promote agricultural education to the extent that local communities will establish vocational schools or departments of vocational education. As these schools are established, they relieve the county advisor who seeks to establish new centers in areas not yet given to this type of education. One, therefore, may expect irregularity in enrollment in the county supervisors' classes.

There are a number of applications for establishment of agricultural centers annually on file in the State Agricultural Education Bureau. After districts establish a vocational school or a department of agriculture they employ full time teachers.

The total enrollment over this period of years has increased approximately 470 per cent. There is an average of about 20 pupils for each center.

The following graph (Fig. 7) brings out a few very significant facts concerning the growth of agricultural education. It is quite obvious that such a rapid increase in enrollment as set forth previously would be accompanied by a marked increase in the establishment of new centers.

In its early stages there was need for selling the idea of agricultural education to the various districts throughout the state. This work was largely the responsibility of county supervisors. Gradually the districts took the initiative to establish schools of their own or to introduce departments of agriculture into their schools. It is true that during the period from 1918-1919, eight vocational schools and departments were dropped, and three during 1923-1924. From 1918-1932 the total number of centers increased from 42 to 232. During the same period centers having county supervisors' classes increased from 20 to 114 in number.

Despite the fact that there may be an occasional school that discontinues agricultural education, the trend is so markedly favorable that one may reasonably expect a continuing interest in vocational education in this field. Within the last decade the demand for this type of education has been especially marked.

A survey of Centers of Vocational Agriculture in Pennsylvania

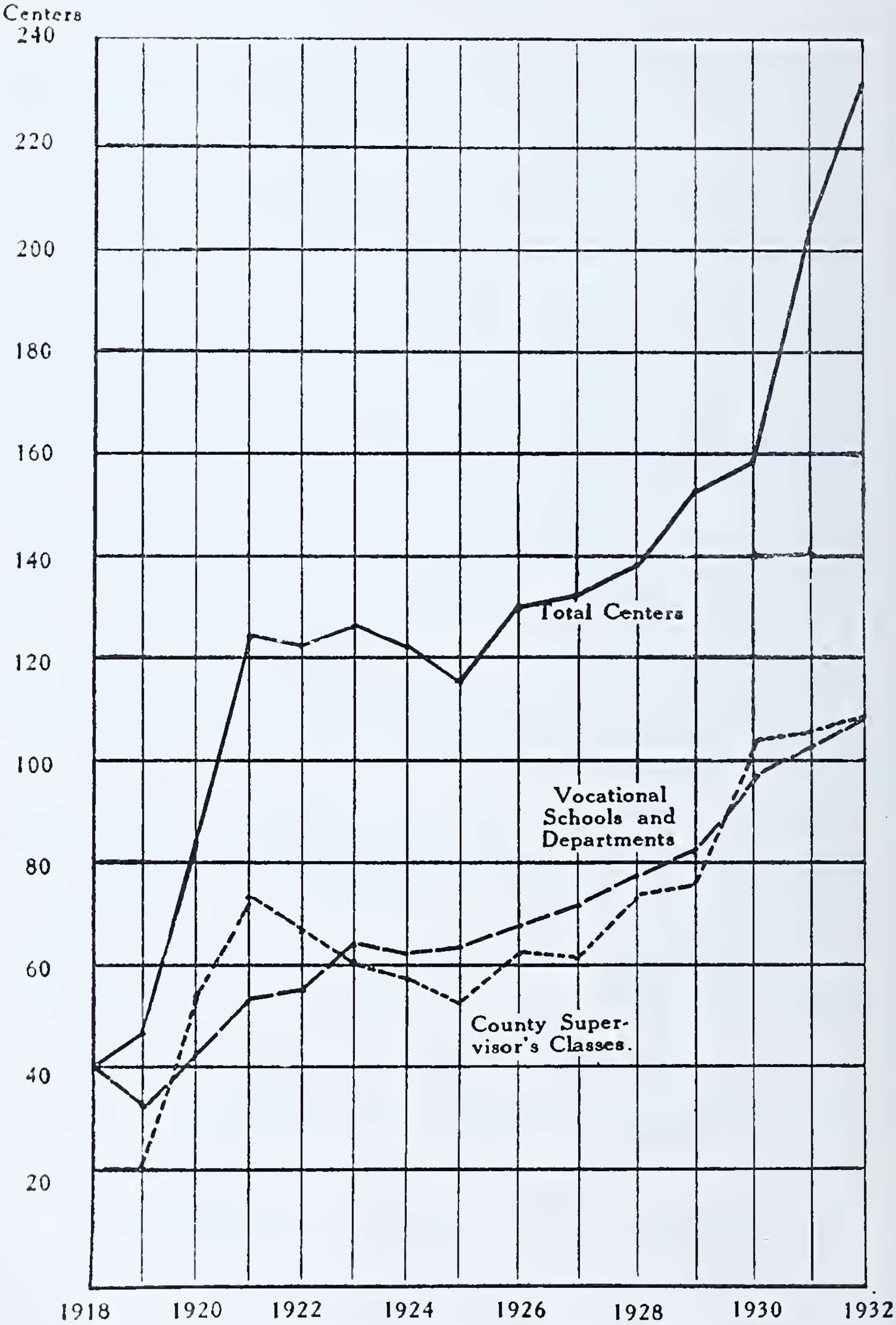


FIG. 7—AGRICULTURAL EDUCATION CENTERS, PENNSYLVANIA, 1918-1932

for the year 1935-1936 discloses the following facts: (1) There are 20 county advisors teaching in 129 schools; (2) there are 58 vocational schools; (3) and there are 90 vocational departments. This makes a total of 277 centers for the state. Harrisburg is the administrative center for the state and Pennsylvania State College is the teacher training center.

As encouraging as this may seem, the need is far from met. In 1930, less than 4500 pupils were enrolled in agricultural schools. There were 846,240 persons engaged in the occupation of farming. This pupil enrollment represented only about one-half of one per cent. of the population engaged in farming in 1930. Manifestly, this condition is inadequate to meet the needs of agriculture. This may further be seen when one takes into account the fact that only about 35 per cent. of the fourth-class districts[6] in Pennsylvania that maintain high schools offer agricultural education.

TYPES OF EDUCATION PROVIDED IN PENNSYLVANIA FOR TRAINING IN AGRICULTURE

The history of agricultural education in Pennsylvania until within the last two decades is the history of agricultural colleges and higher education given in special or private schools.

One type of education provided for in Pennsylvania relative to agriculture is that which prepares the boy to carry on work of a college grade level. Another type is that which aims to give the boy as much practical experience and information as possible so that he may fit into the farming responsibilities immediately after leaving high school. Still another type, which, in fact, is meant to supplement classroom instruction, is home project work; this type of education aims to relate the activities of the child as taken up in school with the actual experience of farming. It is an activity that involves directly the farm and the school.

Home Projects

Home projects as applied to vocational agriculture refer to some particular enterprises, such as swine or corn, which are carried at least through the production and marketing cycle, and longer if possible, by the student under the supervision of the instructor.[7]

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[6] See "Classification of Public Secondary Schools," 1930-1931, p. 55. Department of Public Instruction, Bul. 27, Harrisburg, Pa., 1931.

"The instruction in agriculture, in order to function, must be of a practical nature. A great deal of time is devoted to the practical side of agriculture in the laboratory, in the agricultural shop, and through field trips.

"Vocational work, in order to be successful, must be on the 'learning to do by doing' basis. One of the chief requirements is that every boy carry on an agricultural enterprise which is known as the home project. This is generally conducted on the home farm.

"Early in the school year, with the cooperation and advice of his father and the vocational supervisor, the boy decides on the project he wishes to conduct. If it is in the poultry or live-stock field, the boy is advised to start it at once so that the problems arising from the project can be studied in class and that a complete year's record can be made by the time the next year's project is started. If it is a crop project, time is allotted during the school year for the study of the various phases of the problem, so that when spring comes the boy is ready to do the actual work on his project. In order to obtain school credit for the instruction in agriculture, the boy must complete a satisfactory project each year."[8]

TABLE IX. DEVELOPMENT OF STATE PROJECT CONTESTS[9]

Year	Projects Entered in State Contest (No.)	Year	Projects Entered in State Contest (No.)
1924	189	1930	2332
1925	383	1931	2961
1926	995	1932	3191
1927	1208	1933	3496
1928	1302	1934	3850
1929	1928		

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[7] Cook, Glenn Charles: A Handbook on Teaching Vocational Agriculture, Interstate Printing Co., Danville, Ill., 1933, p. 158.

[8] Vocational Agriculture in Pa., Bul. 8, 1929, Harrisburg, Pa., p. 27.

[9] Taken from the Descriptive Report of State Board to Federal Board for Vocational Education, 1934.

The above table gives evidence of the tremendous interest taken in the contest phase of project work. This activity has grown by leaps and bounds. This appears to be the type of activity whose very nature stimulates active participation on the part of farm boys.

From 1924-1934 there was an increase of over 2000 per cent. of entries into the State Project Contest.

The writer attempted to assemble facts concerning various outstanding types of projects that were carried out in the State of Pennsylvania over a period of years. These were carefully gleaned from the Descriptive Reports in order to give a picture of the trends in various project interests of the boys throughout the state.

TABLE X. PROJECT ENROLLMENTS

Year	Farm Management	Farm Experience	Farm Shop and Mechanics
1922 - 1923	45	16	19
1923 - 1924	12	19	6
1924 - 1925	8	13	5
1925 - 1926	1	4	3
1926 - 1927	....	2	7
1927 - 1928	17	....	9
1928 - 1929	7	4	3
1929 - 1930	12	9	5
1930 - 1931	13	....	....
1931 - 1932	32	....	11
1932 - 1933	13	....	9
1933 - 1934	3	....	26

The lack of uniformity in Descriptive Reports from year to year and the lack of definite and accurate classification of pupils enrolled under the headings may account in part for the marked irregularities and omissions appearing in the table.

There appears to be no attempt to regulate the activities named above because of a few very important reasons. In the first place, the Department of Vocational Agriculture, in most cases, recommends farm management for seniors only. A senior may choose some crop or animal project in preference to farm management. Because projects may be chosen by the student one may expect a wide variation from year to year.

In the second place, the Department of Vocational Education does not encourage the idea of pupils going into farm-experience projects because the pupil taking agriculture is getting this experience on the farm all the while. He would profit more, it is believed, by taking some definite single farm project. Only, where a boy, not on the farm, wishes to prepare for farming, does the choice of a farm-experience project seem advisable.

The radical changes in enrollments in farm shop and mechanics projects may be explained, in the third place, by stating the possibilities entering into this phase of project work. Shop work is frequently open to boys who are not specifically preparing for farm work but who can profit rather advantageously by the shop work which may contribute materially to success in industrial arts. Consequently, a number of boys may enter this type of project representing the vocational department.

The fact that farm-experience projects are not encouraged seems to have a telling effect in that for about four years it has not appeared significant at all. Regarding farm management and farm shop and mechanics no definite trend can be deduced. It would appear, however, that there are large possibilities in these two fields for project work.

TABLE XI. HOME PROJECT WORK IN POULTRY

Year	Scope[10]	No. Enrolled[11]	Year	Scope[10]	No. Enrolled[11]
1922-1923	66,484	693	1928-1929	78,979	397
1923-1924	76,362	639	1929-1930	106,817	586
1924-1925	63,229	549	1930-1931	80,358	419
1925-1926	72,342 (*)	509	1931-1932	166,720	808
1926-1927	65,352	322	1932-1933	211,186	1006
1927-1928	72,562	445	1933-1934	194,550	1013

Quite in keeping with the rapid advance in the poultry industry within the last decade is the rapid advance in poultry project work, under the direction of vocational agriculture in the schools of Pennsylvania. Within a 12-year period the scope of project work in poultry has practically tripled. Even though the number of pupils enrolled shows no such striking increase, the year 1933-1934 shows about 46 per cent. increase over the year 1922-1923.

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[10] Number of chicks and chickens included in projects.

[11] Number of pupils enrolled in poultry project work.

* Not clear in Descriptive Report.

When the poultry industry flourishes during seasons of demand there is keen interest in poultry project work. Within very recent years there is evidence of a wider interest in poultry raising.

Interest may best be measured by the number enrolled rather than by the scope of the project. It is more important to have a larger number engaged in small projects than to have a smaller number engaged in very extensive projects.

TABLE XII. HOME PROJECT WORK IN FRUIT GROWING

Year	Scope[12]	No. Enrolled[13]
1922 - 1923	32.13 Acres	23
1923 - 1924	950 Trees	21
1924 - 1925	568 Trees	20
1925 - 1926	1732 Trees	17
1926 - 1927	14 Acres	15
1927 - 1928	1021 Trees (12½A)	29
1928 - 1929	966 Trees (45A)	56
1929 - 1930	1735 Trees (36¾A)	61
1930 - 1931	1454 Trees (39¼A)	88
1931 - 1932	60.79 Acres	119
1932 - 1933	66.33 Acres	163
1933 - 1934	4000 Trees (80.26A)	199

Project work in fruit growing has advanced tremendously during the last decade. The reader will observe that on the basis of acreage, fruit growing project work has more than doubled in the 12-year period shown above. Again the number enrolled was almost eight times as great in 1933-1934 as in 1922-1923.

The reader must note that the number of fruit trees cannot be regarded as a true index of scope. There may be many more fruit trees of one kind on an acre of ground than of another kind. Even though scope provides a fair basis for judging effort and growth, still the number of pupils enrolled may be considered a truer picture of interest in this kind of project work.

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12. Number of acres of fruit trees and number of fruit trees included in projects.
13. Number of pupils enrolled in fruit growing project work.

Much of the land in Pennsylvania is particularly adapted to fruit growing. The school, by recognizing this, may perform a valuable service in promoting interest in this field. Within recent years however, it has made great strides in the development of project work in fruit growing.

TABLE XIII. Home Project Work in Potato Raising

Year	Scope[14]	No. Enrolled[15]	Year	Scope[14]	No. Enrolled[15]
1922-1923	376.48 Acres	440	1928-1929	373.00 Acres	255
1923-1924	364.09 "	460	1929-1930	380.00 "	302
1924-1925	293.75 "	295	1930-1931	429.40 "	369
1925-1926	353.30 "	388	1931-1932	561.39 "	449
1926-1927	256.25 "	245	1932-1933	588.50 "	571
1927-1928	463.25 "	335	1933-1934	814.90 "	804

In certain portions of the state of Pennsylvania, within recent years, there has been an almost unprecedented effort put forth in both extensive and intensive production of potatoes. The success with which farm products are produced is frequently reflected in the school. In the year 1922-1923 there were 440 pupils enrolled in potato-raising projects as compared with 804 pupils enrolled in the year 1933-1934. The scope of this type of project has more than doubled during a 12-year period.

It will be noted that the progress in this project work, however, was not unbroken. Since 1929, nevertheless, the progress shows a favorable trend. Taking the period as a whole, as represented in the above table, it presents a picture of great possibilities for the school in this field. As long as the scope of project work and the number of pupils engaged in project work are on the increase the school may be reasonably assured that it is performing a valuable service. Such a condition is a challenge to vocational agricultural education.

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14. The number of acres included in project work.
15. The number of pupils enrolled in potato-raising projects.

TABLE XIV. HOME PROJECT WORK IN TRUCK-GARDENING

Year	Scope[16]	No. Enrolled[17]	Year	Scope[16]	No. Enrolled[17]
1922-1923	31.14 Acres	56	1928-1929	250.00 Acres	508
1923-1924	16.33 "	36	1929-1930	254.75 "	546
1924-1925	21.00 "	29	1930-1931	122.75 "	373
1925-1926	79.63 "	135	1931-1932	490.78 "	1416
1926-1927	97.25 "	214	1932-1933	609.20 "	1779
1927-1928	153.66⅔"	359	1933-1934	655.66 "	1959

As has been previously pointed out, the growth of certain types of farming is frequently reflected in the school. The advance in home project work in truck-gardening in the short period of 12 years is almost incredible. Comparing the years 1922-1923 with 1933-1934, one finds that the scope, in terms of acreage, has increased about 20 times while the number enrolled has increased about 35 times. The year 1930-1931 alone shows a very marked decline. Within the most recent years the interest has grown by leaps and bounds.

It is not the purpose here to try to explain the underlying reasons for this growth except to point out that vegetable gardening can be so much more easily adapted to project work because it lies within the reach of many boys and girls who otherwise would not be able to carry on a project on a large scale involving initial expenses for which they could not be responsible. And again the practicability of vegetable gardening

TABLE XV. HOME PROJECT WORK IN DAIRYING

Year	Scope[18]	No. Enrolled[19]	Year	Scope[18]	No. Enrolled[19]
1922-1923	405	58	1928-1929	542	106
1923-1924	245	30	1929-1930	441	119
1924-1925	324	52	1930-1931	412	139
1925-1926	347	50	1931-1932	647	270
1926-1927	94	38	1932-1933	589	276
1927-1928	280	68	1933-1934	654	327

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[16] The number of acres included in truck-gardening project work.
[17] The number of pupils engaged in truck-gardening projects.
[18] Number of dairy cattle included in dairying-project work.
[19] Number of pupils enrolled in dairying-project work.

is so apparent that there are admittedly almost unequaled possibilities in this type of project work.

Pennsylvania is famous for its dairying, especially in certain sections. Despite the fact that this kind of project work involves a great amount of responsibility and in some cases a substantial investment, it has made favorable progress. The above table points out the fact that as regards scope there has been a marked variation from year to year. However, when one views the period as a whole the total tendency indicates growth. As regards the number enrolled in this project work, it may be noted that interest in this field has grown tremendously. The number enrolled in the year 1933-1934 was about six times the number enrolled in 1922-1923.

One may regard pupil enrollment rather than scope as a more reliable basis for determining the possibilities for the school. Again, we may reasonably expect interest to continue in view of the fact that dairying holds its place among the major farming enterprises in Pennsylvania.

Obviously, the vocational agricultural school has almost unlimited possibilities in this field.

TABLE XVI. HOME PROJECT WORK IN HOG-RAISING

Year	Scope[20]	No. Enrolled[21]	Year	Scope[20]	No. Enrolled[21]
1922-1923	614	235	1928-1929	1404	233
1923-1924	710	176	1929-1930	1520	248
1924-1925	581	128	1930-1931	1890	317
1925-1926	754	200	1931-1932	3953	621
1926-1927	1127(*)	182(*)	1932-1933	3775	597
1927-1928	434	95	1933-1934	1509	472

The above table presents a rather fluctating condition in hog-raising project work. That has also been the condition with regard to the farm enterprise of hog raising.

Although the school must use the community survey as a basis for program making and although it must recognize the nature

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20. Number of hogs included in hog-raising project work.
21. Number of pupils enrolled in hog-raising project work.
* Not clear in Descriptive Reports.

of change common to an enterprise it must not become confused by radical changes of a temporary nature. The school seeks to determine the tendency over a period of years upon which to base its judgment for planning its course.

The foregoing table shows, as regards scope over a 12-year period, a favorable trend. Despite a certain marked decline from year to year the total tendency from the year 1922-1923 to the year 1933-1934 is unquestionably favorable.

Therefore, facts seem to indicate that the school may profitably continue to plan on an ever-increasing scale for future development in this field.

The Annual Descriptive Reports of the State Board for Vocational Education show that small grains projects covering a period of 12 years have been on the increase. In 1922-1923 the scope for the growing of small grains included 114.5 acres handled by 24 pupils as compared with a scope of 769.75 acres handled by 111 pupils for the year 1933-1934.

The range for enrollment was 14 to 146, or an annual average of about 71 pupils. The highest enrollment occured in the year 1930-1931. The lowest appeared in 1923-1924. The year ending 1924 had an enrollment of 14 pupils as compared to the year ending 1934 which had an enrollment of 111 pupils.

There appears to be sufficient interest in this field to warrant the school in planning definitely for an expanding program in small grains project work.

The nature of the curriculum in the vocational agricultural schools, or schools having a department of agriculture, may be understood best from the terminology of the courses themselves. They are: related science, poultry, vegetable gardening, ornamental gardening, farm mechanics, farm crops, dairying, animal husbandry, fuit production, farm forestry, farm accounts, rural law, rural sociology, and farm management.

Field trips are a very stimulating type of education because the farm is the great laboratory where the boy is able to observe various problems that concern him. In this way he may also best succeed in finding solutions to his problems.

Agricultural education has come to mean instruction on a twelve months' basis in a number of counties throughout the state. The emphasis is put upon the principle that actual learning results from doing. The claim is also presented by those who instruct in this capacity, that such a procedure wins the interest and confidence of the parents, which strengthens the bond between the home and the school.

Types of Agricultural Schools in Pennsylvania

There are various types of schools in Pennsylvania which offer courses in vocational agricultural training. There are rural community vocational schools; joint vocational schools; departments of vocational agriculture; schools for unit course instruction; part-time schools or classes; and evening schools or classes. Bulletin No. 8 on "Vocational Agriculture in Pennsylvania" describes Rural Community Schools as follows: "Rural Community Vocational Schools are located at centers of rural communities and serve a distinctly rural population. They are called vocational schools because they are designed to prepare boys and girls for the vocations of farming and home making. All pupils enrolling in these schools enter either the agricultural or home making course for two years. In these first two years the pupils spend one-half of each day in academic studies, such as: English, Civics, Health Instruction, History, and Mathematics, and the other half-day on vocational studies, such as: Poultry, Vegetable Gardening, Farm Crops, Animal Husbandry and Farm Shop for boys, and Cooking, Sewing, Dress-making, Household Accounts or Home Nursing for girls. During the last two years the pupils may elect the full academic course, or may continue the former schedule with more advanced vocational work.

"The number of teachers required to operate such a school varies from three to eleven. The usual number is four or five divided as follows: two or three academic teachers, one agriculture and one home-making teachcer. The first and second year vocational classes are usually combined in one section and the third and fourth in another. This is done in order to reduce the number of classes and to alternate the work. Assistant teachers of vocational subjects should be provided when the classes become so large that two classes cannot be handled in one section.

"Some school districts because of limited assessed valuation do not have the necessary finances to build and equip a vocational school. Many districts in the commonwealth are so sparsely settled that the pupils of high school age and qualifications would not constitute a unit sufficiently large to justify the establishment of a vocational school. In many cases two, three or more adjoining districts have a topography and population that will not permit the grouping of pupils in a common community center. Districts so situated find it advantageous to establish a joint vocational school. The cost of the building and equipment is generally divided among the districts concerned, on the basis of the assessed valuations. The expenses of operation are distributed according to the number of pupils enrolled from each district. Joint vocational schools are authorized and provided for in the School Law, Section 3414.

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"Departments of vocational agriculture may be established in high schools where there is a sufficient number of boys wishing to take a course in vocational agriculture to justify the employment of a full-time teachcer. The minimum enrollment for starting such a department is twelve boys. In the case of a small enrollment, two or more districts are encouraged to unite and jointly employ a teacher of agriculture. The teacher when employed for two or more high schools divides his time accordingly. The vocational department is a part of the regular high school organization, like any other department of the high school. The only requirement is that sufficient room and equipment be provided to take care of the agricultural course and that the instruction be so arranged that the group of boys taking vocational agriculture shall have a full half-day set aside for their instruction in vocational agriculture.

"The principal difference between vocational schools and the high school with departments of vocational agriculture and home making is that vocational work is required of all students for the first two years in vocational schools, while in departments such work is elective. Another difference is in the method of reimbursement from State and Federal funds.

"The instruction given by the county itinerant teacher and supervisor of vocational agriculture (formerly known as County Vocational Supervisor of Agriculture) is presented on a unit basis, and is given in approximately six high schools of the county, depending upon the accessibility of the schools. Classes are conducted one day a week throughout the school term. Home projects are an outgrowth of this instruction by the itinerant teacher and supervisor, just as in a high school department of agriculture or rural community vocational school.

"The itinerant teacher and supervisor is also employed for twelve months. His time during the summer months is occupied by supervised projects, visiting prospective pupils and collecting material for use in his teaching."[22]

"The part-time school or class as established under the National Vocational Education Act is a public school or class in which persons who have entered upon the work of the farm return to school and pursue short-unit courses in technical agriculture and, where possible, in subjects which improve their civic and vocational intelligence; and who do at least six months directed or supervised practice in agriculture. The instruction is designed to further fit persons over 14 years of age for profitable work in the respective farming occupations in which they are engaged . . . . According to estimates made from the 1920 Census, there are over 1,200,000 boys who are eligible for part-time instruction,"[23] in the U. S. Evening schools are open to both adults and boys over 14 years of age who are engaged in farm work and wish to improve their status by taking evening courses. Those who should benefit by evening schools are: (1) farmers who may be owners wishing to increase their knowledge that they may be more efficient in some special phase of their vocation, and (2) those who either expect to own farms sometime or are interested in preparing themselves for responsible positions on the farms.

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22. "Vocational Agriculture in Pennsylvania," p. 9, Department of Public Instruction, Bulletin No. 8, 1929, Harrisburg, Pa.

23. Agricultural Education, Organization and Administration, pp. 22-23, Bulletin No. 13, Issued by Federal Board for Vocational Education, Washington, D. C., May, 1930.

For example, a boy whose school career may have been cut short because of some circumstances that forbade his continuing in school may be able to give time evenings for the acquisition of such knowledge that is essential to his future success in farming. And again, an adult whose school days were spent before the introduction of agricultural schools, may attend evening classes in order to receive aid in the matter of catching up with current changes and also gain help in interpreting these changes in terms of his own interests. Evening schools may offer either farm shop work or agricultural subjects. For the most part evening schools are designed for adults but may be adapted to the needs of adolescents. Instruction in these schools or classes does not have to be offered for a definite period. Short units may be organized. Registration for these classes may occur as many as four times a year depending upon the number of units of work offered.

SUMMARY OF THE DEVELOPMENT OF AGRICULTURAL EDUCATION IN PENNSYLVANIA

The need for Vocational Agricultural Education was recognized by a committee of the Pennsylvania Legislature of 1837.

In 1854 an act was passed by the State Legislature incorporating an institution by the name of "The Farmers' High School of the State of Pennsylvania."

In 1893 the Office of Experiment Stations in the United States Department of Agriculture began to take an interest in agricultural education below the college level.

After 1900 the movement for secondary education in agriculture developed rapidly and broadly.

A survey made by the United States Bureau of Education on the status of secondary education in agriculture in 1916 showed that secondary instruction in agriculture was given in eight types of schools, totaling 3,675. Of these 2,760 were public high schools, not state-aided.

On February 23, 1917, the Smith-Hughes Vocational Education Act was passed as permanent legislation granting large sums of money from the Federal Government for instruction in agriculture, home economics, and the trades and industries. This is for children over 14 years of age receiving instruction below college grade.

In 1929, the passage of the George-Reed Act provided further aid to agricultural education, subject to the same provisions as in the Smith-Hughes Act.

On June 8, 1936 the George-Deen Law was approved. It provides for further development of vocational education in the several States and Territories by annual appropriations of $12,000,000 for vocational education.

A map of Pennsylvania showing the location of agricultural education centers reveals irregular and poor distribution, as well as an insufficient number of them.

The total enrollment for the various types of schools in Pennsylvania, for the period covering 1918 to 1932, has increased approximately 470 per cent. There is at present an average of about 20 pupils for each center.

From 1918-1932 the total number of centers increased from 42 to 232 for the state of Pennsylvania.

In 1930 the pupil enrollment in agricultural education represented about one-half of one per cent. of the number of persons engaged in agriculture. Furthermore, only about 35 per cent. of the fourth class districts maintaining high schools offered agricultural education in 1930.

A report for the year 1935-1936 discloses the following facts: (1) There are 20 county advisors teaching in 129 schools; (2) there are 58 vocational schools; and (3) there are 90 schools having vocational agricultural departments. There is a total of 277 centers for the State.

Home Projects are growing by leaps and bounds. Those representing the major farm enterprise are showing tremendous progress.

From 1924-1934 there was an increase of entries into the State Project Contest of over 2000 per cent.

Enrollments for farm management, farm experience, and farm shop and mechanics projects appear very irregular from year to year. Facts serve to indicate that interest is very limited in these fields.

Home Project work in poultry shows considerable growth in both scope and number of pupils enrolled.

Home Project work in fruit growing reveals that enrollments have increased from 23 to 199 in a 12-year period. The scope of project work has increased to a very marked degree.

Home Project work in potato raising has practically doubled itself in both scope and enrollment during the period 1923-1934.

Home Project work in truck gardening from 1923-1934 shows greater advance than any other type of project. The scope of this type of project work has increased by over 20 times; the number enrolled has increased about 35 times.

Home Project work in dairying over a 12-year period has multiplied about six times in enrollment. The increase in scope, although not so significant as that in enrollment, shows a substantial advance.

The study of the situation with regard to home projects in hog raising reveals fluctuating conditions. Despite radical changes the total tendency shows growth favorable to this type of project work.

Home Project work in small grains raising, according to facts submitted by official sources, reveals a growing interest and an expanding enterprise.

The types of education provided in Pennsylvania for training in agriculture are: (1) education preparing the boy to carry on work of a college grade level; (2) education providing the boy with practical experience and information; (3) home project work meant to supplement classroom instruction.

The types of agricultural schools in Pennsylvania are: (1) rural community vocational schools; (2) joint vocational schools; (3) departments of vocational agriculture; (4) unit course instruction; (5) part-time schools or classes; and (6) evening schools or classes.

CHAPTER IV

LEGAL PROVISIONS RELATING TO AGRICULTURAL EDUCATION IN PENNSYLVANIA

Article xxxiv

(3401) The Department of Public Instruction shall have the power and its duty shall be:

a. To administer the laws of this Commonwealth relating to vocational education, and household arts education as defined in said laws;

b. To investigate the need for, and aid in, the establishment of, supervise, inspect, and approve, for the purpose of reimbursement on the part of the State, school departments, and courses for manual training, domestic science, household arts, agricultural, industrial, and commercial education, as well as continuation schools, when maintained as a part of the public school system of the Commonwealth.

Definitions

(3406) "Vocational Education" shall mean any form of education of less than college grade, given in school or elsewhere, the purpose of which is to fit an individual to pursue effectively a recognized profitable employment, wherever pursued for wages or otherwise.

"Vocational Agricultural Education" shall mean that form of vocational education which fits for the occupations connected with the tillage of the soil, the care of domestic animals, forestry, and other wage-earning or productive work on the farm.

"Vocational industrial, vocational agricultural, or vocational home economics school or department," or "vocational school or department," shall mean a distinctive organization of courses, pupils, and teachers approved by the State Council of Education, designed to give either vocational industrial, vocational agricultural, or vocational home economics education, as herein defined.

"Vocational evening class" shall mean a class giving such training as can be taken by persons already employed during the working-day, and which must in its instruction deal with the subject-matter of, and be so carried on as to relate to, the day employment.

(3407) The State Council of Education is hereby authorized and directed to investigate and to aid in the introduction of vocational industrial, vocational agricultural, and vocational home economics education; to assist in the establishment of schools and departments for the aforesaid forms of education, and to inspect and approve such schools or departments as are hereinafter provided. The State Council of Education shall make a report annually to the Governor and Legislature describing the condition and progress of vocational industrial, vocational agricultural and vocational home economics education during the year, and shall also make such recommendations as the Council may deem advisable.

The State Superintendent of Public Instruction shall be the executive officer of the State Council of Education for the administration of this act. He shall appoint, from time to time, with the approval of the State Council of Education, such expert assistants, other than those already provided for by law, as may be necessary in vocational industrial, vocational home economics, vocational agricultural, or vocational commercial education, and all clerical and other agents necessary in carrying out the provisions of this act. (Amended May 1, 1925, P. L. 418, Sec. 2.)

The above, taken from the Pennsylvania School Code, in the main constitutes the essential features of the administration phases of the law regarding vocational education.

TABLE XVII. SUMMARY OF LEGAL PROVISIONS RELATING TO AGRICULTURAL EDUCATION IN PENNSYLVANIA[1]

Section of Legal Code	Topic	Provision
3401	Administration	Department of Public Instruction has power to administer the laws of Pa., relating to vocational education.
3405	Duties of the Bureau	To investigate the need for aid. To supervise, inspect, and approve for the purpose of reimbursement.
3406	Definitions	Vocational education. Vocational agricultural education. Vocational school or department. Vocational evening class.
3407	State Council of Education	To investigate and aid in introduction of Agricultural Education. To assist in establishing schools. To inspect and approve such schools. To report progress to Governor and Legislature and to make recommendations.
3407	Executive Officer	The State Superintendent of Public Instruction to be executive officer of the State Council of Education vested with appointive power, subject to approval of Council.
3408	Classes	Vocational agriculture to be offered in day, evening or part-time classes to those over 14 years of age.
3409	Establishment of Vocational Schools	School districts may establish vocational schools.
3410	Joint vocational schools or departments	Two or more districts may establish such joint schools by law sections 1801-1808 inclusive, Article 18.
3412	Non-resident pupils	May make applications to enter vocational schools in another district.
	Application for admission	To be made to school board of district having such school. Upon refusal of application by the board, application may be made to State Council of Education whose word is final.
3413	Approved local or joint vocational schools	If approved by State Council of Education shall receive reimbursement.

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1. Pennsylvania School Code, pp. 214-224.

TABLE XVII. SUMMARY OF LEGAL PROVISIONS RELATING TO AGRICULTURAL EDUCATION IN PENNSYLVANIA (Cont'd)

Section of Legal Code	Topic	Provision
3414	Reimbursement	First-class districts to receive 25% of the sum expended for salaries during the previous year. Districts of Second, Third and Fourth Classes—based upon true valuation per teacher of assessable property. Exceeding $200,000 to extent of 40%. $100,000-$200,000 to extent of 45%. $50,000-$100,000 to extent of 50%. $50,000 and less to extent of 55%. No district shall receive more than 80% of any one teacher's salary from either Federal or State funds or both.
3415	Biennial Estimates	State Council of Education shall present to Legislature estimates of expenditures for a two-year period. Statements are to be used as a basis for appropriations.
3416	Statement of Expenditures	Statement of amount expended to be presented to Supt. of Public Instruction annually.
3418	Smith-Hughes Act	State accepts Act of Congress for Vocational Education.
3419	Funds	State Treasurer is custodian of funds.
3420	Powers of State Board of Education	Power to make plans for promotion of education provided for by law; and to execute plans for the preparation of teachers of vocational subjects.

SUBSIDIES

Agricultural education benefits by three sources of support: Federal, state and local. In the present study a point of interest is to be found in a method of distributing aid to vocational education.[2] In a method of distribution of aid both the factor of "a basis of apportioning aid to local communities" and "limiting provisions" are to be considered. These limiting provisions are those specifying minimum salaries, those specifying a maximum for aid, those specifying minimum enrollments, those specifying school conditions under which the teacher of agriculture may work, those providing for selecting the teacher of agriculture, and those prescribing local action necessary to establish a department.

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[2] Principles Underlying the Distribution of Aid to Vocational Education in Agriculture, pp. 1-2, Bulletin No. 84, June, 1923, Washington, D. C.

(Federal Provisions)

In Section 10 of the Smith-Hughes Act we have the controlling provisions for the application of Federal aid to agricultural education in the States. It follows: "That any State may use the appropriation for agricultural purposes, or any part thereof allotted to it, under the provisions of this act, for the salaries of teachers, supervisors, or directors of agricultural subjects in schools or classes or for the salaries of supervisors or directors of such subjects under a plan of supervision for the State to be set up by the State Board, with the approval of the Federal Board for Vocational Education. That in order to receive the benefits of such appropriations for the salaries of teachers, supervisors, or directors of agricultural education that such education shall be that which is under public supervision or control; that the controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and be designated to meet the needs of persons over fourteen years of age who have entered upon or who are preparing to enter upon the work of the farm or of the farm home; that the State or local community, or both, shall provide the necessary plant and equipment determined upon by the State board, with the approval of the Federal Board for Vocational Education, as the minimum requirement for such education in schools and classes in the State; that the amount expended for the maintenance of such education in any school or class receiving the benefit of such appropriation shall be not less annually than the amount fixed by the State board, with the approval of the Federal Board as a minimum for such schools or classes in the State; that such schools shall provide for directed or supervised practice in agriculture, either on a farm provided for by the school or other farm, for at least six months per year; that the teachers, supervisors or directors of agricultural subjects shall have at least the minimum qualifications determined for the State by the State board, with the approval of the Federal Board for Vocational Education."[3]

Another significant source of Federal aid is made available through the passage of the George-Reed Act of February 5, 1929. "The appropriations made by this Act shall be in addition to, and shall be subject to the same conditions and limitations as, the appropriations made by the Act of 1917."[4]

State Aid

State Aid as used here means the aid distributed by the State in contrast with aid distributed or administered by the Federal Government.

In Bulletin No. 84, Agricultural Series No. 15, issued by the Federal Board for Vocational Education, are given the five chief characteristics of a desirable method of distributing aid to vocational education in agriculture. These five characteristics, the writer believes, are particularly significant as a basis for the evaluation of methods of distributing state aid. At this point there will be merely a restatement of these characteristics.

1. "The method should stimulate educational activity beyond minimum requirements. The difficulty of measuring local educational activity and of determining how much is due to its several causes has forced us to the alternative of assuming that, if a method of distributing aid encourages certain conditions, local educational activity beyond minimum requirements will result. These conditions are:

   (a) Understanding and approval of the aims, methods, and results of vocational agriculture by the community.

   (b) A sharing by the State of a proportion of the burden resulting from specified, desirable expenditures.

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[3] Smith-Hughes Act, Section 10.

[4] See Act providing for the Further Development of Vocational Education-Public, No. 702, Seventeenth Congress, S. 1731, Section 3.

- (c) A substantial participation on the part of a community in the financial and administrative responsibility for its agricultural department.

2. The method should encourage placement of vocational agriculture under conditions favorable for its development, as follows:

- (a) In communities able properly to equip and maintain agricultural departments.
- (b) In communities where there are high-school facilities available.
- (c) In communities where farming is an important industry.
- (d) In communities providing ready access to the agricultural department from farm homes.
- (e) In communities providing enrollment in agricultural departments large enough to insure reasonable economy. The maximum should be the number above which effective instruction can not be given.
- (f) In communities where local interest is a factor in the establishment of agricultural departments.
- (g) In communities which insure a fairly uniform distribution of agricultural instruction throughout the agricultural areas of a State.

3. The method should encourage school organization suitable for instruction in vocational agriculture. A method of distributing aid may affect school organization as to:

- (a) Stability:
    1. By increasing stability of teacher tenure.
    2. By insuring certainty as to amount of aid.
- (b) Co-ordination between the agricultural department and the rest of the school system:
    1. By increasing responsibility of the teacher of agriculture to local authorities.
    2. By promoting an understanding and approval of vocational agriculture throughout the school system and in the community.

(c) Flexibility:

1. By increasing the possibility of using aid in a wide variety of school situations.

4. The method should equalize financial burdens incident to the equipment and maintenance of agricultural instruction:

(a) Property valuation should be a factor in the distribution of aid to vocational agriculture.

5. The method should be adapted to the educational needs peculiar to the State: Economy of aid can not be included as a desirable characteristic of a method of distributing aid to vocational education in agriculture because:

(a) Varying conditions among the States invalidate comparisons.

(b) Financial local educational activity results in economy of aid. A method of distribution which encourages local financial educational activity is probably economical."[5]

A careful examination of the annual reports of the Federal Board for Vocational Education together with the Statistical Reports of the Superintendent of Public Instruction, covering all the years from 1918 to 1933 which represent the available information concerning expenditure of Federal, state and local money for vocational agricultural education in Pennsylvania, supplies the necessary data. Despite the fact that many of these reports give provisional figures on a pro-rata basis for the annual expenditures, which reports are subject to a final audit, there is so small a difference between the final audit and the provisional figures that the trend may be very satisfactorily represented by these figures. The reports in many instances present only the finally audited accounts annually for the United States as a whole.

In order to get a picture of the development of agricultural education in Pennsylvania in terms of various types of aid applied to this type of education, the following data are submitted:

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5. Principles Underlying the Distribution of Aid to Vocational Education in Agriculture Bulletin No. 84, Agricultural Series No. 15, Washington, D. C., 1923, pp. 26-27.

TABLE XVIII. EXPENDITURE OF FEDERAL, STATE, AND LOCAL MONEY FOR VOCATIONAL AGRICULTURAL EDUCATION IN PENNSYLVANIA[6]

Year	Federal	State	Local	Total
1918	$ 30,744.79	$ 16,897.90	$ 19,821.33	$ 67,464.02
1919	34,598.08	15,199.77	19,398.33	69,196.18
1920	53,373.16	20,657.68	32,715.35	106,746.19
1921	76,861.98	37,064.69	39,797.36	153,724.03
1922	83,993.77	39,479.81	44,513.99	167,987.57
1923	90,730.50	39,485.80	51,244.73	181,164.03
1924	88,481.55	42,792.74	51,737.21	183,011.50
1925	87,839.03	46,008.17	56,304.66	190,151.86
1926	100,354.96	175,784.35	127,322.69	403,462.00
1927	102,287.51	207,210.30	118,688.05	428,185.86
1928	113,371.00	73,174.55	51,700.45	238,246.00
1929	136,827.00	101,412.00	55,445.00	293,684.00
1930	157,564.18	116,592.84	57,708.24	331,864.90
1931	178,264.39	383,588.09	254,319.59	816,142.07
1932	191,721.33	375,463.44	224,614.38	791,799.15
1933	176,387.45	409,131.76	275,882.42	861,401.63

The increase in Federal aid to agricultural education in 1933 over the aid given in 1918 amounts to about 474 per cent. It may be noted that in 1931 and 1932 the aid exceeded that of 1933. State aid shows an increase of over 2400 per cent. in 1933 over that of 1918. State aid during this period of years is at no time previous to 1933 higher than the appropriation for that year. There has been a constant increase year by year, with the exception of a few marked reductions after 1927 for the years 1928, 1929 and 1930. Two small reductions occurred in 1919 and 1932, respectively, in contrast with Federal aid, which shows a more steady up-grade through this period and only a few reductions, that were not very significant. State aid shows more radical changes which, in all probability, occurred in response to economic distress which the State of Pennsylvania felt very keenly.

Local aid given to vocational agriculture since 1918 also shows tremendous increases. The amount given in 1933 shows an increase of about 1282 per cent. over that of 1918. The years

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[6] Taken from Reports of Federal Board for Vocational Education and State Superintendents' Annual Statistical Reports.

1928, 1929 and 1930 show a falling back in aid to less than one-half of that afforded in 1927. The amounts for 1931, 1932 and 1933 show unprecedented effort on the part of local communities to support the agricultural program. The following graph may serve to give a clearer picture of the situation.

It may readily be observed that Federal aid, with a few exceptions, has been on the increase. The directions of state aid and local aid are somewhat similar. The Federal government is not easily influenced by radical fluctuations in state and local aid. The Federal government, as shown by the graph, can be depended upon to provide encouragement to local communities.

SUMMARY OF LOCAL PROVISIONS RELATING TO AGRICULTURAL EDUCATION IN PENNSYLVANIA

The Department of Public Instruction shall have the power to administer laws of this Commonwealth relative to agricultural education.

The Department's duty is to investigate need for, and aid in the establishment of schools and courses, supervise, inspect, and approve for the purpose of reimbursement.

The definitions of "Vocational Education" are given in Article XXXIV, Section 3406, of the Pennsylvania School Code.

The authorization of the State Council of Education relative to agricultural education is given in Article XXXIV, Section 3407, of the Pennsylvania School Code.

The State Superintendent of Public Instruction shall be the executive officer of the State Council of Education.

Agricultural Education benefits by three sources of support namely, Federal, state and local subsidies.

In Section 10 of the Smith-Hughes Act we find the controlling provisions for the application of Federal aid to agricultural education in the states.

The five chief characteristics of a desirable method of distributing aid to vocational education in agriculture are: (1) The method should stimulate educational activity beyond minimum requirements; (2) The method should encourage placement of vocational agriculture under conditions favorable for its develop-

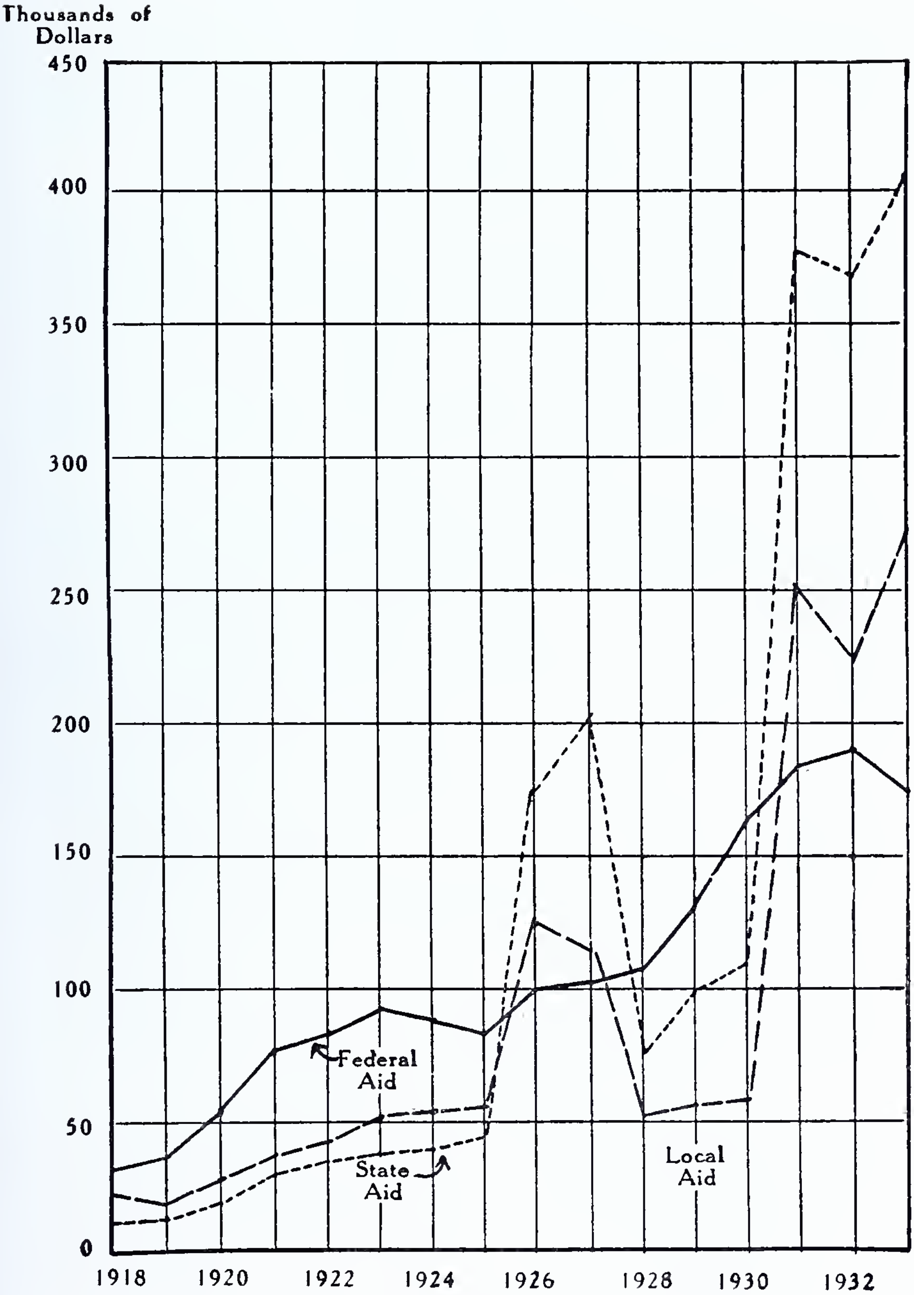

FIG. 8—SOURCES OF FUNDS FOR VOCATIONAL AGRICULTURAL EDUCATION, PENNSYLVANIA

ment; (3) The method should encourage organization suitable for instruction in vocational agriculture; (4) The method should equalize financial burdens incident to the equipment and maintenance of agricultural instruction; (5) The method should be adapted to the educational needs peculiar to the State.

The increase in Federal aid comparing 1918 with 1933 amounts to about 474 per cent.

Similarly State aid shows an increase of over 2400 per cent.

Local aid shows an increase of about 1282 per cent. for the same years.

Total aid shows an increase of about 1177 per cent. for the same years.

Legislative action can be credited with supplying a source of encouragement which has served as a powerful stimulus to state and local initiative in developing agricultural education.

CHAPTER V

AGRICULTURAL EDUCATION IN RELATION TO SCHOOL COSTS AND SCHOOL ATTENDANCE IN PENNSYLVANIA

EXPENDITURES

According to the 1931 report of the Federal Board for Vocational Education the cost of all vocational education in the United States in 1931, including the Federal, state, and local outlays, amounted to $32,139,192.31. The 1931 report also states that but $9,977,115.80, including Federal, state and local outlays, were used for vocational agriculture.

The following is quoted from Perry W. Reeves: "This total of $32,139,192.31 used for vocational education is very small in comparison to the total expenditure for education of all kinds, which exceeds $3,200,000,000 annually. It means that approximately 1 per cent. of all funds spent for education was spent for vocational education. This is, indeed, a small proportion, when account is taken of the fact that approximately 90 per cent. of our population, gainfully employed, is engaged in non-professional occupations, industry, agriculture, commerce, and home making."[1]

"According to the figures of the Federal Board for Vocational Education less than one-third of the money spent for vocational education is used for vocational agricultural education in the U. S. This means that approximately three-tenths of one per cent. of the money expended for education of all kinds is used for vocational agricultural education. In other words every time one cent is spent for vocational agriculture approximately $3.00 are spent for all other forms of education."[2]

The annual reports on public school expenditures for the state do not differentiate between expenditures for elementary and secondary education. The average cost per pupil means the average cost per pupil for both elementary and secondary education.

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[1] Reeves, Perry W.: A Digest of the Development of Industrial Education in the U. S., Federal Board for Vocational Education, March, 1932.

[2] Cook, Glenn Charles: Handbook on Teaching Vocational Agriculture, Interstate Printing Co., Danville, Ill., 1933, p. 19.

TABLE XIX. EXPENDITURES FOR AGRICULTURAL EDUCATION BASED ON AVERAGE DAILY ATTENDANCE[3]

Year	Average Daily Attendance	Total current Expenses (Excludes Capital Outlay & Debt Service)	Avg. Cost per Pupil	Expenditures for Agricultural Education	*Avg. Exp. per pupil for Agriculture
1919	1,312,346	$ 65,555,008	$49.95	$ 69,196.18	$ .053
1920	1,244,373	64,831,088	52.09	106,746.19	.086
1921	1,345,219	82,040,641	60.98	153,724.03	.115
1922	1,448,498	90,889,655	62.74	167,987.57	.116
1923	1,459,765	100,546,704	68.87	181,164.03	.124
1924	1,495,027	109,794,534	73.43	183,011.50	.122
1925	1,539,454	117,604,006	76.39	190,151.86	.124
1926	1,550,274	121,640,870	78.46	403,462.00	.260
1927	1,565,844	126,255,294	80.63	428,185.86	.273
1928	1,599,351	134,010,492	83.79	238,246.00	.153
1929	1,608,522	140,256,285	87.19	293,684.00	.183
1930	1,667,576	144,734,533	86.79	331,864.90	.199
1931	1,708,083	148,337,459	86.84	816,142.07	.478
1932	1,735,563	148,792,253	85.73	791,799.15	.456
1933	1,777,503	137,039,068	77.10	861,401.63	.485
	23,057,398 Total A	1,732,327,900 Total B		5,216,766.97 Total C	

The foregoing table which represents a 15-year period, clearly sets forth several significant facts. The average daily attendance for the 15-year period increased over 35 per cent. Total current expenses, excluding capital outlay and debt service, more than doubled during this period. The average cost per pupil increased from $49.95 in 1919 to $77.10 in 1933. Expenditures for agricultural education increased 1145 per cent. for the year 1933 over that of 1919. The average expenditure per pupil for agriculture increased from 5.3 cents to 48.5 cents during this 15-year period.

On the basis of the data of Table XIX, for the period 1919-1933, the expenditure for agricultural education was 23 cents per pupil in average daily attendance while the total current expenditure for all educational purposes was $74.69 per pupil.

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[3] Data taken from State Superintendent's Statistical Reports (Annual) and the Report of Federal Board of Vocational Education.

* Reports available on per pupil costs fail to show separately the average cost per pupil for those enrolled in agriculture for the period of years which this study covers.

It has been pointed out previously that agriculture holds a major position among the leading industries in Pennsylvania. It appears as though agricultural education is falling far short of its just share of support in terms of expenditures.

These facts should not be interpreted to mean that agricultural education as such can be acquired with less cost than other types of education. They rather go to show that agricultural education is not given sufficient recognition.

The average expenditure per pupil for agriculture, it should be pointed out, is cost of instruction only. For example, for the year 1930 the table must be read "19.9 cents was spent for instruction in agriculture per pupil based on average daily attendance." For the same year $86.79 was the average cost per pupil, excluding capital outlay and debt service. This amount, however, covered the items of general control, instruction, operation, maintenance, auxiliary agencies and fixed charges.

It is a matter of common opinion that instruction costs approximate 75 per cent. of the total costs excluding capital outlay and debt service. On this basis, if the cost of instruction in agriculture was 19.9 cents, it may be said that the average cost per pupil for agricultural education as a whole for the year 1930 amounted to approximately 27 cents.

The funds for agricultural education come from three sources. These are: local, state and Federal appropriations. They are given explicitly for the purpose of instruction. An examination of Table XVIII shows that the expenditure for agricultural education for the years 1931, 1932 and 1933 increased enormously. From the standpoint of percentage of increase, local expenditure is the most significant for these years.

The table also shows that local effort is rewarded in terms of increased Federal and state subsidies. Whenever the local communities fall down on their support of agricultural education, a decrease in Federal support is sure to follow.

This marked increase of expenditure for the years 1931, 1932, and 1933 was accompanied by a rapid rise in enrollment in agricultural education as may be seen in Figure 7 and an increase in new centers of agricultural education as may be noted in Figure 6.

Apparently many local communities recognize the functional value of agricultural education and, therefore, take the initiative to establish it in their communities. Certainly, facts indicate that local interest is decidedly on the increase.

In 1926 a study was made by McLendon to determine the cost of high school agriculture as compared with the cost of other secondary subjects in the four year accredited, consolidated high schools of Mississippi for the session, 1925-26.

The findings and interpretations of this study are as follows: "The arithmetical mean of cost per student, for each of the groups of subjects based on salaries of teachers was as follows:

Mathematical, 16.65 cents; vocational, 9.32 cents; language, 12.98 cents; science, 14.58 cents; history, 13.77; agriculture, alone 6.70 cents. Reports showed that only 45.56 per cent. of the vocational teacher's time is spent in class instruction and the remainder is spent in attending to outside activities. The larger the class, the less was the cost per student. The vocational group of subjects cost less than any other group, per student."[4]

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4. McLendon, George Minor: Salary Cost for Instruction in Agriculture vs. Other Secondary Subjects. Thesis M. A. 1926, George Peabody College for Teachers. 43 pp., Library, George Peabody College for Teachers, Nashville, Tenn.

TABLE XX. Extent of Expenditure for Agricultural Education by Types of Aid for Twenty-five Per Cent. of the Counties of Pennsylvania

County	Year Ending June 30	Total Salary	State Vocational Aid	Federal Vocational Aid	General Aid	Total Aid	Local Aid
Adams	1920	1982.50	$	$	$	$	$
	1926	2200.00	110.00	742.50	585.00	1437.50	762.50
	1931	2450.00		1082.50	877.50	1960.00	490.00
	1932	2450.00		1082.50	877.50	1960.00	490.00
	1933	2350.00		1057.50	585.00	1642.50	707.50
	1934	2000.00		900.00	585.00	1485.00	515.00
	1935	2000.00		898.00	702.00	1600.00	400.00
Allegheny	1920	2160.00					
	1926	9530.00	67.50	3831.00	2342.00	6240.50	3289.50
	1931	10100.00	296.00	2990.25	2340.00	5626.25	5473.75
	1932	10030.00	420.00	2008.65	2340.00	4768.65	5261.35
	1933	7480.00	64.00	2147.40	1755.00	3866.40	3613.60
	1934	5388.00	228.00	1691.51	1755.00	3674.51	1703.49
	1935	6003.00	264.60	1773.30	1755.00	3792.90	2210.10
Berks	1920						
	1926	2100.00		945.00	585.00	1530.00	570.00
	1931	7100.00	480.00	2218.00	1872.00	4570.00	2600.00
	1932	7200.00	500.00	2218.00	1872.00	4570.00	2610.00
	1933	7200.00	500.00	2718.00	1872.00	4590.00	2610.00
	1934	4070.00		1854.00	1287.00	3141.00	929.00
	1935	3903.33		1778.99	1287.00	3065.99	837.34
Butler	1920	1546.00					
	1926	2000.00		1000.00	540.00	1540.00	460.00
	1931	9290.00		3035.00	2106.00	5141.00	4149.00
	1932	9570.00		3105.00	2106.00	5211.00	4359.00
	1933	9290.00		3035.00	2106.00	5141.00	4149.00
	1934	7482.00		2364.90	2106.00	4470.90	3011.10
	1935	7458.00		2181.00	2281.00	4462.50	2995.50
Center	1920	3700.00					
	1926	3900.00	214.00	1415.00	1080.00	2709.00	1191.00
	1931	6600.00		2647.50	2632.50	5280.00	1320.00
	1932	6600.00		2647.50	2632.50	5280.00	1320.00
	1933	6500.00		2577.50	2632.50	5200.00	1300.00
	1934	5730.00		1951.50	2632.50	4584.00	1146.00
	1935	5700.00		1927.50	2632.50	4560.00	1140.00
Clarion	1920						
	1926						
	1931	2180.00		802.50	877.50	1680.00	500.00

TABLE XX—(Continued)

County	Year Ending June 30	Total Salary	State Vocational Aid	Federal Vocational Aid	General Aid	Total Aid	Loca Aid
	1932	2100.00		802.50	877.50	1680.00	420.0
	1933	1860.00		610.50	877.50	1488.00	372.0
	1934	2000.00		722.50	877.50	1600.00	400.0
	1935	1704.00		485.70	877.50	1363.20	340.8
Erie	1920	4597.44					
	1926	13550.00	300.00	6070.00	2895.00	9165.00	4385.0
	1931	13040.00	213.66	5617.75	3451.50	9282.91	3757.0
	1932	13100.00	231.00	5586.75	3451.50	9269.25	3830.7
	1933	9810.00	131.10	5434.40	3451.50	9017.00	793.0
	1934	10979.50		4676.10	3451.50	8127.60	2851.9
	1935	11140.00	51.45	4761.42	3451.50	8264.37	2875.6
Indiana	1920	1792.00					
	1926	3028.33		1373.16	585.00	1958.16	1170.7
	1931	3200.00		1600.00	702.00	2302.00	898.0
	1932	3300.00	112.50	1650.50	877.50	2640.00	660.0
	1933	3300.00	98.99	1551.01	811.10	2560.09	739.9
	1934	2700.00	5.04	1344.96	804.96	2160.00	540.0
	1935	3870.00		1516.50	1579.50	3096.00	774.0
Jefferson	1920	3560.00					
	1926	4770.00		2310.00	1215.00	3525.00	1245.0
	1931	7483.33		3354.16	2632.50	5986.66	1476.7
	1932	6600.00		2647.50	2632.50	5280.00	1320.0
	1933	6420.00		2503.50	2632.50	5136.00	1284.0
	1934	4798.67		1241.53	2632.50	3874.03	961.4
	1935	4557.00		1047.20	2632.50	3680.70	876.0
Lancaster	1920	3422.03					
	1926	9000.00		3945.00	2340.00	6285.00	2715.0
	1931	7500.00		3600.00	1872.00	5372.00	2128.0
	1932	7500.00		3275.00	1637.00	4912.00	2588.0
	1933	6967.50		3062.62	1872.00	4934.62	2032.8
	1934	6287.50		2637.37	1872.00	4509.37	1778.3
	1935	6287.50		2749.87	1872.00	4642.87	1644.3
Lebanon	1920						
	1926	2200.00		990.00	585.00	1575.00	625.0
	1931	4520.00		1996.50	1462.50	3459.00	1061.0
	1932	4500.00		1987.50	1462.50	3450.00	1050.0
	1933	4460.00		1969.50	1462.50	3432.00	928.0
	1934	5400.00		2182.50	1947.50	4230.00	1170.0
	1935	5400.00		2182.50	1947.50	4230.00	1170.0

TABLE XX—(Continued)

zerne	1920	525.00					
	1926	5485.00		2266.50	1575.00	3841.00	1644.00
	1931	4560.00		2068.50	1579.50	3648.00	912.00
	1932	4560.00		2035.30	1579.50	3643.68	916.32
	1933	4344.00		1895.70	1579.50	3475.20	868.80
	1934	3660.00		1348.50	1579.50	2928.00	732.00
	1935	3660.00		1348.50	1579.50	2928.00	732.00
tter	1920	2133.75					
	1926	4300.00		2045.00	1215.00	3260.00	1040.00
	*1931						
	1932	4700.00		2132.50	1579.50	3712.00	988.00
	1933	4500.00		1845.00	1755.00	3600.00	900.00
	1934	4100.00		1525.00	1755.00	3280.00	820.00
	1935	4100.00		1988.50	1579.50	3568.00	532.00
merset	1920						
	1926						
	1931	2000.00		900.00	585.00	1485.00	515.00
	1932	3600.00		1620.00	585.00	2205.00	1395.00
	1933	3600.00		1620.00	1170.00	2790.00	810.00
	1934	3400.00		1530.00	1170.00	2700.00	700.00
	1935	7800.00		3715.60	2691.00	6006.60	1793.40
oga	1920	1800.00					
	1926	2100.00		1050.00	540.00	1590.00	510.00
	1931	7600.00		3570.50	2281.50	5852.00	1748.00
	1932	7625.00		3595.00	2281.50	5876.50	1748.50
	1933	8860.00	135.60	3747.10	2983.50	(6866.20)	(1993.80)
	1934	7463.37	125.00	2501.70	2983.50	(5610.20)	(2033.17)
	1935	9630.00	191.00	3071.00	3743.00	(7005.00)	(2625.00)
ayne	1920	2168.98					
	1926	6020.00	400.00	2010.00	1755.00	4165.00	1855.00
	1931	7940.00	134.00	3059.00	3159.00	6352.00	1588.00
	1932	8000.00	123.00	3118.00	3159.00	6400.00	1600.00
	1933	7670.00	223.00	2400.00	3157.00	5780.00	(1890.00)
	1934	6655.00		2164.00	3159.00	5323.00	1332.00
	1935	6655.00		2164.00	3159.00	5323.40	1332.10
estmoreland	1920	2030.00					
	1926	5460.00		2592.00	1125.00	3717.00	1643.00
	1931	13200.00		5905.00	3087.00	8992.00	4208.00
	1932	16663.17		6799.82	4037.00	10336.82	5836.35
	1933	18980.00		7808.25	5104.00	12912.25	6067.75
	1934	20855.25	50.00	7620.14	7459.00	15129.14	5726.11
	1935	24072.50	55.00	8405.00	8309.00	16769.00	7303.50

† Numbers in parentheses uncertain.

* No data supplied in affidavits.

As early as 1913 agricultural education was subsidized by the State. Five centers for the purpose of giving agricultural education were established in the year 1913. For agricultural teachers who gave their full time to this kind of instruction the state paid two-thirds of the salaries. By 1914 there were 11 centers established.

The regulation adopted for subsidizing agricultural education provided that Federal aid should be given to the extent of 50 per cent. of the salaries, and that state and local aid together should provide 50 per cent. A limitation that may not be overlooked is that state and Federal aid may not exceed 80 per cent. of total salary.

The foregoing table furnishes data for 25 per cent. of the counties in Pennsylvania. The counties selected represent a fair sampling of the counties of Pennsylvania as may be seen by Figure 2. It may be noted that they are well distributed throughout the State and that the three types of agricultural counties are represented. The counties which provided no agricultural education at all were automatically excluded.

The counties included in this study are: Adams, Allegheny, Berks, Butler, Center, Clarion, Erie, Indiana, Jefferson, Lancaster, Lebanon, Luzerne, Potter, Somerset, Tioga, Wayne, and Westmoreland.

The writer wishes to point out several limitations of the foregoing table. The affidavits containing the information on appropriations and expenditures by counties for the year 1920, failed to give separately the amount of aid provided by the different sources indicated in the headings of the table. There were also no data in the affidavits for State Vocational Aid for most of the years. The only definite information, significant to this study, which was available, was that of total salary for each county. All other years represented in the table give information under such headings as total salary, State vocational aid, Federal vocational aid, general aid, and total aid. Local aid was determined by subtracting total aid from total salary. The foregoing table, therefore, shows actual aid on account of agricultural teachers.

One feature, common to all the counties represented in this study, is that when steps are taken by the local community to curtail expenses by lowering salaries, Federal aid likewise decreases. The general aid from state sources decreases also. Although it would appear to the local community to be a distinct economy, such reduction may prove to be not only a curtailment of expenses but also a curtailment of efficiency. An effort to economize may also be accompanied by closing of schools or the reduction of the number of teachers.

As bases for the comparison of school costs the average annual cost for the five year period 1931 to 1935, and the "rural farm" population were used. Also a comparison of the local and total aid for the year ended 1931 was made with these two types of aid for the year ended 1935. The school costs for the period represented are based upon the U. S. 1930 census showing the "rural farm" population of Pennsylvania and the U. S. 1930 census showing the number of farms in Pennsylvania. Table XX contains figures showing total expenditures for the 17 counties represented.

Prior to a discussion of costs of agricultural education for these counties it may be well to point out that the "rural farm" people are the ones who presumably benefit from expenditures for agricultural education, even though there may be some people living on farms who are not interested in agriculture, as well as some who are classed as "urban" or "rural non-farm" who are interested. Nevertheless, the data provided by the Census are the most nearly accurate in regard to this aspect of our population.

The salary* paid for instruction in Adams County, for the period represented, reached its peak during 1931 and 1932. During this same period total aid reached its highest point. Adams County has 3,333 farms† and 4.5 persons‡ per farm. The cost of agricultural education per thousand of rural farm population for this county for the five year period 1931-1935 amounted to $150 or 15 cents per person.

Similarly, the salary paid for instruction in Allegheny County, for the period represented, was at its highest during 1931 and

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* See Table XX for "Total Salary."

† Based upon Fifteenth Census of the U. S., 1930; Agriculture, Vol. II, Part 1.

‡ Based upon Fifteenth Census of the U. S., 1930; Population, Vol. III, Part 2.

1932. Total aid was at its highest in 1931. Table XX shows that "total salary" for 1935 fell approximately 40 per cent. below that of 1931 and 1932. Allegheny County has 2,935 farms. There is an average of 5.6 persons per farm. The cost of agricultural education per thousand of rural population for the five year period was $480, or 48 cents per person.

On the basis of total salary, Berks County put forth its greatest effort for agricultural education during the three successive years of 1931-1933. This county has 5,359 farms with an average of 5.4 persons per farm. Expenditures for agricultural education for the five year period, ended 1935, per thousand of rural population, amounted to $200, or 20 cents per person. Table XX shows that the years during which local effort was the greatest, total aid was the highest.

In 1932 Butler County was spending more for agricultural education than at any other time in the period represented. As may be expected, total aid was highest, for that year, likewise local aid. This county has 3,690 farms with five persons per farm Four hundred and sixty dollars were spent per thousand of rural farm population for the five-year period represented. This amounted to 46 cents per person.

Center County's expenditures for this type of education were greatest in 1932. This county has 1875 farms with an average of 5.2 persons for each farm. For the five year period represented there is an average annual expenditure per thousand of rural farm population of $640, or 64 cents per person. Instruction costs were highest for the years 1931 and 1932. Facts, showing decreased aid in subsequent years, may not be considered as evidence of decreased interest.

Clarion County has over half of its land area in farms which number 2164. There are 4.6 persons per farm. The expenditures for agricultural education for the five year period 1931-1935 averaged $190 per thousand rural farm population. This was at the rate of 19 cents per person. Table XX shows that local aid did not exceed $500 for any year.

At various times Erie County benefited to the extent of $900 total aid annually. When local effort was the greatest, total aid was the highest. This county has 4,885 farms averaging 4.4 persons per farm. Per thousand rural farm population, expenditures, for the period represented, amount to $540, or 54 cents per person annually. The foregoing table will show the extent to which Erie County has advanced its agricultural education program.

Table XX shows that Indiana County spent more for agricultural education in 1935 than in any preceding year. It has 3,058 farms with an average of 5.1 persons per farm. Its cost for this type of education, for the period of years included, amounted to $210 per thousand rural farm population, or 21 cents per person.

The highest expenditure for Jefferson County occurred in 1931. Since then there has been a gradual decline. This county has a total of 2,450 farms. There are 4.9 persons per farm and, for the period of years represented in this study, there was an expenditure of $500 per thousand rural farm population, or 50 cents per person. On a comparative basis, Jefferson County has good standing among the counties of Pennsylvania.

Of all the counties of Pennsylvania, Lancaster County has the greatest number of farms as well as the largest rural population. It has 9,705 farms which represent 85.9 per cent. of the total land area. There are 4.8 persons per farm. The very limited amount of $150 per thousand rural farm population was spent for agricultural education for the period of years considered. This means that 15 cents per person was spent for this type of education.

Lebanon County has 2,203 farms which represent 70.3 per cent. of the total land area. The foregoing table shows that whereas many of the other counties decreased their expenditures in recent years, Lebanon County increased its expenditures. In 1934 and 1935 Lebanon County spent more than in any preceding year. There are on an average five persons per farm for whom 44 cents each is spent for the period of years represented. In other words, $440 is spent annually for every thousand persons of rural farm population.

Luzerne County has an average of 5.1 persons for every farm. For each of these 34 cents was spent annually for the period of years represented. This means that $340 per thousand rural farm population was expended for agricultural education. Again, it may be said of Luzerne, as of many other counties, that when local effort was the greatest other aid was the highest.

There are 1564 farms in Potter County. There are 4.1 persons per farm. On the bases of rural farm population and the expenditures for the years 1931-1934 inclusive, $700 is spent per thousand persons. This amounts to 70 cents per person. Figure 2 shows Potter County as a minor agricultural state. Taking this into consideration this county has good standing as compared with many others.

Table XX shows that, on the basis of total salary, Somerset County has increased its expenditures more than three times over that of 1931. There are 3400 farms in this county which occupy 62 per cent. of the land area. There are five persons per farm. For every thousand persons rural farm population, $240 is spent for agricultural education, or 24 cents per person. The year 1935 marks a higher expenditure than any preceding year.

Tioga County has 3168 farms. This county also shows expansion of its agricultural education program. For every farm there are 4.2 persons for whom 63 cents each is spent annually, or $630 per thousand rural farm population. The highest expenditure for the period of years considered occurred in 1935 at which time also local aid was the highest.

The highest total expenditure for Wayne County occurred in 1932. Since then it practically has been holding its own. This county contains 2,908 farms for which there are 4.4 persons each. There is an expenditure per thousand persons of $580, or 58 cents each. Total aid reached its highest point in 1932.

A striking example of a rapidly expanding agricultural education program is found in Westmoreland County. In five years time expenditures almost doubled. This county has 4,712 farms. There are 5.4 persons per farm for which 73 cents each was spent annually. The amount of $730 per thousand persons was spent annually for the period of years represented. Westmoreland excels all other counties in its expenditures per thousand persons for agricultural education.

The foregoing descriptions are designed to give the reader a picture of the status of costs and the trends of expenditures in these 17 counties which, it is believed, are typical of the State of Pennsylvania.

TRANSPORTATION COSTS

It is the writer's purpose at this point to bring to the reader's attention the matter of transportation costs, because it is believed that this phase has a vital bearing upon the problem of agricultural education.

School districts are not required to furnish transportation to high school students who are beyond the compulsory school attendance age.* It is believed that if a law were enacted to the effect that transportation will be furnished to high school students until the end of their high school career, this would encourage pupils to continue their schooling, especially those of the rural districts who have to cover great distances in order to reach school.

Facts are, therefore, submitted to show that transportation costs cannot be considered a legitimate argument against agricultural education costs and that these transportation costs should not be a deterrent to the program of agricultural education.

In a previous study by the author entitled "A Program of Agricultural Education for Adolescence in Lancaster County" a detailed examination was made of transportation costs for Lancaster County.

In the year 1932-33 it cost the State of Pennsylvania and Lancaster County about $75,000 to carry rural school children to the various schools. Almost 3000 pupils were transported by private automobiles, trolley cars, and buses by 30 townships.

All of the 30 townships except four have asked the State Department of Public Instruction for 50 per cent. of this cost and expect to receive it according to an act of Assembly. Several townships, because of their financial status, are entitled to 60 per cent. of their transportation costs from the State. The maximum paid by the State to any district is 50 per cent. of $6,000 or in special cases 60 per cent. of $6,000. Those whose costs exceed $6,000, however, receive only $3,000. The amount expected, therefore, from the State for the 30 townships totals $33,237.76.

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* See Pa. School Code.

Some few townships own their own buses. In working out the cost per pupil per mile for such townships, depreciation was counted in with actual immediate costs. The transportation situation as of the year ending 1933 showed the average cost per pupil per mile to have been two cents.

It was found that the larger the number of passengers and the greater the distance traveled the less it cost per pupil per mile for transportation. In a number of cases where the number of pupils to be conveyed is large, the cost per pupil per mile is less than one-half cent, while in a few cases, where the pupils to be conveyed are small in number, the cost ranges from about one and one-half cents a mile to six cents a mile. This means that it costs from 10 to 15 times as much to carry some pupils as it costs to carry others. Or, in other words, where a large number of pupils can be gathered, 10 or 15 pupils can be carried for the same cost as one, where only a few are gathered.

The statistical information relative to transportation costs shows that such costs are not cumbersome. Where daily trips exceed twenty miles, transportation costs range from two mills to nine mills per mile.

Since transportation costs are so low, legislative action should provide for the transportation of pupils over 16 years of age. The law should make it possible for pupils to receive free transportation to the end of their high school career.

SUMMARY OF THE COST OF AGRICULTURAL EDUCATION

The expenditure for vocational education is exceedingly small in comparison with the total expenditure for education of all kinds. Approximately three-tenths of one per cent. of the money spent for education is used for vocational agriculture in the United States.

For the period of 1919-33, expenditure for agricultural education in Pennsylvania, based on average daily attendance, ranged from 5.3 cents per pupil per year to 48.5 cents.

The average expenditure per pupil per year for agricultural education has increased more than nine times in the period 1919-33. The average cost per pupil per year for all kinds of education in the same period has in no case increased beyond 75 per cent.

On an average the expenditures for agricultural education, according to a study of 25 per cent. of the counties in Pennsylvania, show that agricultural education is either holding its own or is on the increase.

On the basis of the average costs of agricultural education for the five-year period 1931-1935 (with the exception of Potter four-year period 1932-1935) based on total salary, and the rural farm poulation, the following results were obtained. The costs per thousand of rural farm population for the 17 counties included are: Adams, $150; Allegheny, $480; Berks, $200; Butler, $460; Center, $640; Clarion, $190; Erie, $540; Indiana, $210; Jefferson, $500; Lancaster, $150; Lebanon, $440; Luzerne, $340; Potter, $700; Somerset, $240; Tioga, $630; Wayne, $580; Westmoreland, $730. The average for the 17 counties is approximately $420.

The following observations may be made from the foregoing data.

1. There are approximately five persons per farm for the counties of Pennsylvania for each of whom is spent, on an average annually, for the period of five years represented, 42 cents.
2. For the years 1931 and 1932 in most cases expenditures for agricultural education reached a high point.
3. Over the period of years shown in Table XX the total tendency is favorable.
4. With the reduction of salaries there is a reduction of general aid and Federal aid. It is believed, however, that reduction of salaries may not be construed as evidence of declining interest.
5. Comparing the local and total aid for the year ended 1931 with these two types of aid for the year ended 1935 for the various counties represented, it may be noted in Table XX that the Federal government is not easily influenced to make drastic cuts in its appropriations. On the other hand, local aid tends to change radically in response to economic conditions. Apparently,

the Federal government recognizes the encouragement the local communities need, and, therefore, attempts to support them to the utmost.

6. When local aid is high, total aid invariably may be expected to be high.

7. It is believed that the amounts spent for agricultural education in Pennsylvania are far too low when the importance of agriculture is taken into consideration and when agricultural education costs are compared with the costs of all other kinds of education (See Table XIX).

Statistical information relative to transportation costs shows that these costs are not burdensome. Where daily trips exceed 20 miles transportation costs per pupil per mile may easily be less than a cent.

CHAPTER VI

NEED FOR REORGANIZATION OF AGRICULTURAL EDUCATION IN PENNSYLVANIA

INEQUALITY OF OPPORTUNITY

In Article XXXIV, Section 3409, in the School Laws of Pennsylvania we have the following statement: "Any school district may, through its board of school directors establish and maintain vocational industrial, vocational agricultural, vocational home economics, and vocational commercial schools or departments."

The fact that the laws of Pennsylvania permit such action is no guarantee that such action will obtain when the need arises.

Rural communities frequently elect members for their school boards who maintain standards which prevent progressive change. Basing their stand upon such arguments as "leaving good enough alone" and "extravagance" they frequently cannot be made to see the major needs of the communities they serve.

In a recent study made by the writer on "The School Situation in Lancaster County" he found that Lancaster has 62 school districts, 59 fourth-class, two third-class and one second-class. Agricultural education is offered in only three of the districts despite the fact that Lancaster County is predominantly agricultural. It was also found that these centers, in relation to their situation in the county, in point of accessibility to all parts of the county were poorly distributed.

After such factors as need, transportation costs, accessibility and appropriate locations were taken into consideration the investigator was led to believe that there should be at least six centers of agricultural education in the county of Lancaster. This, however, is not one of the most significant examples of inequality in Pennsylvania.

A map of Pennsylvania indicating the varying agricultural education centers and their distribution for the year 1929-1930 shows that 27 counties have no such centers whatsoever. In the case of one county there were 11 centers, in another 10, and in several others nine each. It can readily be seen that those counties, which have school boards who take the needs of their communities seriously are benefiting by such schools. This means that they are benefiting at the expense of those communities which fail to establish such schools. They benefit in terms of receiving state, and Federal aid as well as in terms of greater agricultural success.

The "Annual Descriptive Report of the State Board for Vocational Education to the Federal Board for Vocational Education" for the year ended June 30, 1933, states the urgency of establishing agricultural centers as follows: "Vocational Education in Agriculture must be extended to additional centers and to greater number of boys if the schools of this State are to take care of the annual demand for well-trained young farmers to replace men who cease farming for one reason or another. There should be a better distribututION of vocational centers than exists at the present time. At the present time the output from our Vocational Departments is about 10 per cent of the annual turnover of farmers. Such counties as Columbia, Crawford, Chester, and Bradford are meeting the needs in this respect almost one hundred per cent."

"An adequate preparation of the farmer of tomorrow for the demands of competitive agriculture will not be insured until and unless the agricultural departments of rural high schools become so numerous and widespread that they reach and serve the needs of all farm youth who are still interested in farming as a career. And these departments will accomplish team play between the farm and the school in the discharge of their joint task and mutual responsibility."[1]

A survey of the agricultural centers by counties in Pennsylvania for the year ended 1935 shows that the minor agricultural counties as a class are meeting their agricultural educational needs (on the basis of centers) about 40 per cent. The medium agricultural counties as a class are meeting theirs almost 50 per cent. and the major agricultural counties as a class are meeting theirs slightly more than 50 per cent. Such a condition substantiates the thesis that there is a great need still unmet.

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[1] "Vocational Education and Changing Conditions," pp. 56-57, Voc. Ed. Bulletin No. 174, Washington, D. C., 1934.

ECONOMIC AND SOCIAL CHANGE

Agriculture has always had to face the problem of economic and social change. Today, perhaps, more than ever before, is there a need for economic and social adjustment in agriculture. The responsibility of meeting these changes devolves largely upon the educational program. No longer is agriculture able to cope with the problems peculiar to itself without the aid of a well-ordered, well-developed and well-planned program of agricultural education. Agriculture, in Pennsylvania, has also felt the stress in the economic world in recent years.

"The problem in every branch of agriculture is no longer how to produce more commodities, but how to diversify and to produce more economically as well as to market successfully the farmer's annual out-put. The solution of this problem by any farmer makes more demands on him for the use of his head than on the farmer of any previous generation. He needs to make a study of market conditions and market behavior which will help him from year to year to plant the right kind and amount of this, that or the other crop and sell his product at the time and place it will yield the largest return. He needs also to take over new knowledge concerning new crops that could be grown."[2]

When one considers the special difficulties and needs of farmers one can justly uphold the argument that agricultural education for all farmers, especially potential and prospective farmers, is indispensable to future happiness and success in farming. The research committee of the staff of the Board charged with the task of conducting the inquiry for a study on "Vocational Education and Changing Conditions" consisted of such eminent persons as J. C. Wright, Assistant Commissioner for Vocational Education; Charles R. Allen, Educational consultant; John Cummings, Chief, research and statistical service; T. C. Foster, and others. From the various problems which this committee set up, the writer will merely summarize their findings, observations, and conclusions. The difficulties and needs summarized are as follows:

1. Subsistence farming versus competitive farming.

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[2] *Ibid.*, pp. 21-22.

2. Size of farms is increasing.
3. Farm population is decreasing.
4. The farmer must conduct his affairs by more scientific and business-like methods.
5. It is impossible for the incompetent farmer to survive under competitive conditions.
6. Inertia is a major cause for the failure of farmers.
7. The agricultural worker is facing an increasing need of greater skill in order to survive as a competitive farmer.
8. The modern farmer must develop versatility.
9. In many cases the farmer faces the need for a greater diversification of products on his own home farm.
    (a) to insure a greater degree of self-sufficiency.
    (b) to insure conservation of soil fertility.
10. The farmer has an increasing difficulty in adjusting his product to market demands.
11. The farmer has a greater need for the exercise of managerial ability in handling farm problems.
12. The farmer faces an increasing need of understanding and carrying out intelligently special legislation and regulations concerning farm products and other farm matters.
13. The farmer faces, in many cases, geographical shifts in production areas which make it necessary for him to modify the old or take up an entirely new line of production.
14. The farmer faces a fluctuating competition in his business due to drift from and to urban life.
15. It is difficult for the farm youth to make an intelligent decision regarding his life occupation.
16. It is more difficult for the farm youth to be a competent farmer today than in generations past.
17. Present economic conditions have caused a set-back in the agricultural program.[3]

To apply these findings directly to the State of Pennsylvania one may find specific evidence in the support of the reference made to social change and need of economic adjustment in recent "Annual Descriptive Reports" issued by the Vocational Agricultural Department. The report ending June, 1930, reports the following: (1) several hundred farm sheriff sales; (2) unemployment; (3) scarcity of ready money.

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[3] *Ibid.*, pp. 45-58.

The report ending June, 1931, reports the following: (1) moving back to farm; (2) drought-challenge to effort to conserve soil moisture; and that (3) Pennsylvania is importing from other states much that should be produced at home.

In the 1932 report we find the following: (1) serious economic conditions; (2) number going back to farm increased; (3) appeal for help comes from prospective young farmers; (4) unfavorable economic conditions reduced incentive to carry on business-like projects; (5) demand for extention of agricultural services in Pennsylvania.

In the 1933 report appear the following findings: (1) economic situation worse than year before; (2) Westmoreland County alone received garden relief funds to the extent of $38,000—supplies for 6,000 relief gardens; (3) back to the farm movement has continued until it is now apparent that nearly all of our former abandoned farm homes are again occupied.

VOCATIONAL INSTABILITY

Agriculture must be elevated through the aid of agricultural schools to a point where greater vocational stability will result. It follows naturally that a boy reared on the farm has a greater chance to become a successful farmer than one who is reared in an entirely different environment. The school has the responsibility of both retaining and promoting interest in farming in the farm boy.

There is a strong argument for the establishment and maintenance of agricultural education centers when one considers the condition, now so marked, which might be termed vocational agricultural instability.

We shall first view this problem from the point of view of surveys made by the Federal Board of Vocational Agriculture. It made surveys of former students of vocational agriculture in 37 states in 1922, 46 states in 1927, and 47 states in 1932 securing the following data:

The percentages following were based on former students who

TABLE XXI. OCCUPATIONS FOLLOWED BY FORMER STUDENTS OF VOCATIONAL AGRICULTURE[4]

	1922	1927	1932
Now farming	59%	58.6%	63.8%
In related occupations	6%	11.2%	5.5%
In non-related occupations	11%	19.6%	19.9%
In agricultural colleges	9%	2.7%	4.1%
In non-agricultural colleges	15%	7.9%	6.7%
	100%	100%	100%

left school with one or more years of instruction in vocational agriculture. These figures indicate that the largest percentage of students with agricultural training engage in agricultural work.

The fact still remains that 26 per cent. of the students formerly taking agricultural courses went afield into non-related occupations and non-agricultural colleges. There is definite evidence of instability as an influencing condition in the lives of the boys trained in agricultural courses. Facts that indicate a tendency to deviate from the line of work adolescents set out to do, may contribute to the claim that not only do we have not enough agricultural education, but what we have is not the proper kind. The need of a reorganized education relating to the vocation of farming is apparent when boys lose interest in the fields which they initially entered.

The Annual Descriptive Report of 1924 submits the following extract, which indicates the waste our schools have to face when they offer agricultural educational work. This extract also gives a picture of instability that exists either in the homes of those who attend school or in the school itself. There should be no reason why only one-half of the boys trained for the vocation of agriculture should enter it. The extract follows:

"There are approximately 202,000 farmers in the State of Pennsylvania. The average period during which a farmer is following his vocation has been estimated at 30 years. Based on these figures, 6,733 new farmers are needed each year to take the place of those farmers who have discontinued farming.

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[4] Cook, Glenn Charles: Handbook on Teaching Vocational Agriculture, p. 22. Interstate Printing Co., Ill., 1933.

Present experience in vocational education indicates that approximately 50 per cent. of the boys trained in agriculture follow the vocation. Hence, it is necessary to give vocational training to twice the number of boys actually needed to man the farms. On this basis we should have approximately 13,466 boys and young men each year completing courses in our vocational schools, trained to enter the various vocations in farming. Inasmuch as the total enrollment in vocational agriculture during 1923-1924 was approximately 2,500, it is evident that training in vocational agriculture is reaching only a small percentage of young men needed each year to enter the great work of managing our Pennsylvania farms."

During the school year 1923-1924 vocational work in agriculture was conducted in only 38 of the 67 counties of Pennsylvania.

In the report for June 30, 1929, a statement is made regarding the effectiveness of vocational agricultural education in Pennsylvania. It shows according to a study of the occupations of former students of vocational agriculture in Pennsylvania made by Dr. C. E. Meyers in 1922, that approximately 45.7 per cent. of these young men were engaged in farming and that a considerable number were in occupations related to farming or in agriculture colleges. It is likely that a similar study at the present time would show a slightly higher percentage of former vocational students engaged in some phase of farming.

From the report ending 1931 we have the following statistics:

TABLE XXII. NUMBER OF ALL-DAY AND DAY-UNIT BOYS WHO TOOK VOCATIONAL AGRICULTURE THE PREVIOUS YEAR AND HAVE LEFT SCHOOL (Graduated or Dropped Out) 1931

Class	Number	Per Cent.
A. Farming as laborers	277	40
B. Farming as partners	118	17
C. Farming as renters	10	1
D. Farming as managers	12	2
E. Farming as owners	6	1
F. Studying Agriculture in Colleges	34	5—
G. In lines of work other than Agriculture	236	34
Total	693	100

The same study for the year ending 1932 shows the following:

TABLE XXIII. NUMBER OF ALL-DAY AND DAY-UNIT BOYS WHO TOOK VOCATIONAL AGRICULTURE THE PREVIOUS YEAR AND HAVE LEFT SCHOOL (Graduated or Dropped Out) 1932

Class	Number	Per Cent.
A. Farming as laborers	340	46
B. Farming as partners	122	17—
C. Farming as renters	15	2
D. Farming as managers	10	1
E. Farming as owners	7	1—
F. Studying Agriculture in Colleges	28	4—
G. In lines of work other than Agriculture	214	29
	736	100

We certainly cannot expect a large percentage of boys immediately after leaving school to take over the responsibilities of ownership, but it appears rather uneconomical to educate for the farm and then see approximately 30 per cent. going into other lines of activity not related to agriculture. The vocational program must be constructed with the objective of stability consciously operating throughout each phase. Agricultural education, put on an absolute par with academic training, will make for stability, not only in a temporary sense, but in a permanent and progressive sense.

Another way in which to view the effect of vocational instability is by studying rural and urban tides and the situation in which the shifting farmer places himself.

Rural and Urban Tides

"How formidable these annual shifting tides of people have been is shown by the figures for the past thirteen years. During that period the annual number of persons leaving farms for cities has ranged from about 900,000 in 1920, as the lowest, to more than 2,300,000 in 1926, as the highest. On the other hand, the drift from the city to the farm ranged from about 600,000 in 1920, as the lowest, to more than 1,700,000 in 1930, as the highest. During the ten-year period from 1920 to 1930, inclusive, there was a net movement of more than 6,000,000 from farms to cities. For the past three years, a reversal of the earlier trend has resulted in a net movement of 564,000 persons from the cities to the farms.

"It is very important to bear in mind that for vocational education, the large fact in these population shiftings cityward and farmward is the volume of population displacement—the sum of the outflow plus the inflow, rather than any net change. The excess of the farmward over the cityward movement in any year or as the case may be, of the cityward over the farmward movement in any year, is only a net balance which is in no respect whatever a measure of the volume of displacement. The newcomer in the country presents a problem of occupational adjustment independently of the number of old residents who may recently have moved to the city and these farm workers who move to the city will necessarily present problems of occupational adjustment to the city.

"In the shifting between rural and urban communities, the individual suffers a great handicap, who has gone from rural to urban life and then back again to rural. If he returns to the same farm after 10 years of absence he is 10 years behind in his skill and knowledge. This has to be made up before he can be classified as a successful competitive farmer. However, in many cases his move back to the rural section has been to a different locality from which he emigrated to the city or urban district. He is essentially a new farmer who must acquire all of the knowledges and skills of his new situation."[5]

The school must serve as a stabilizing agency to reduce to a minimum the shifting tendency. Three distinct factors which the course of study and curriculum makers in agricultural education must bear in mind are: (1) the inequalities of opportunity in agriculture; (2) the social and economic changes to which agriculture is subjected; and (3) the demoralizing effect of vocational instability.

The foregoing conditions reflect the great need for reorganization of agricultural education in Pennsylvania in a broad and comprehensive sense. Although general in nature these conditions are none the less ponderous.

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[5] "Vocational Education and Changing Conditions," pp. 104-105, Voc. Ed. Bulletin No. 174, Washington, D. C., 1934.

There are, on the other hand, certain specific facilities and improvements needed which are exclusively peculiar to the school situation.

FACILITIES AND THE IMPROVEMENTS NEEDED IN VOCATIONAL AGRICULTURAL EDUCATION

The "Annual Descriptive Report of the State Board for Vocational Education to the Federal Board for Vocational Education" for the year ended 1933 summarizes rather thoroughly the situation, regarding improvements so urgently needed. This situation characterizes the whole period from the beginning of the agricultural educational movement in Pennsylvania until the present day. The terms facilities and improvements include such phases of the agricultural education program as equipment in classroom and laboratory, teaching materials, organization of course, organization of project work, teaching procedure and classroom management, farming mechanics, shop and equipment, farm mechanics instruction, records and related activities.

A. Classroom and Laboratory.

1. Secure a suitable room above grade with standard light and ventilation facilities. If the room is to be used for only classroom and laboratory purposes, it should be a unit to a unit and a half in size. If it is to include the shop, it should be at least a unit and a half, preferably two units in size.

2. Provide an agricultural atmosphere here by placing framed agricultural pictures on the walls and by having agricultural products in evidence, properly protected.
3. Provide facilities for laboratory work including tables and chairs in place of desks, and a work shelf under the windows, the latter convenient for growing plants.
4. Provide a sink with running water or a pipe line and drain along back of window shelf.
5. Provide suitable book shelves, bulletin files, equipment and supply cupboards, filing cabinet, magazine rack,

etc. Possibly several of these should be built in one well-planned unit.

6. Provide facilities for stereopticon film strip projector or movie.
7. Provide an adjustable chart standard, or special facilities for displaying charts.
8. Provide a hot bed (electric if possible) and a cold frame.

B. Teaching Materials.

1. Provide a good assortment of reference books.
2. Provide up-to-date texts.
3. Provide plenty of modern bulletins on subjects of local application, properly filed and indexed.
4. Provide plenty of modern bulletins, charts, pictures, film strips, and other illustrative materials, properly filed.
5. Provide suitable equipment for conducting desirable laboratory practicums in all phases of agriculture to be taught.
6. Provide supplies of local soils, seeds, fertilizers, feeds, spray materials, plant specimens, diseases, insects, etc., properly stored.

C. Organization of Course.

1. Make a survey of the community to determine major and minor farming enterprises, related farm activities, and prevailing farm practices.
2. With results of the survey as a guide, organize a four-year course in agriculture on the basis of the importance of the various crops in that community, distributing the time of instruction so that it will best serve the average boy's four-year project program and still give the boy a general knowledge of agriculture for his community. Arrange instruction in so far as possible, on a seasonal sequence basis.
3. Organize plans for class work on one of the following bases: (a) each class separate for a 90-minute period; (b) freshmen and sophomores separate for a 90-minute period each, juniors and seniors combined for a 135-minute

or 180-minute period; (c) freshmen and sophomores combined for a 135-minute or a 180-minute period, juniors and seniors combined for a similar period.

4. Organize an annual plan of work for each of the class groups to be taught, bearing in mind the after-notion of subject matter in case classes are to be combined and given special attention to seasonal sequences of units and the logical allotment of time per unit. Include in each annual plan, classroom, laboratory and field trip work, farm mechanics enterprises, project planning and supervision and the major items of community service.

D. Organization of Project Work.

1. Visit each freshman boy and his parents in the home before the beginning of the school year. With the aid of carefully planned and mimeographed outlines, carefully explain the agricultural course and the home project program. Leave copies with the family for future reference.

2. Either during the preliminary visit or on a second visit immediately after school opens, discuss with the boy and his parents a four-year project program. Work out cooperatively such a program and secure approval of it.

3. Assist the boy in making arrangements for the first year project in the four-year program, giving due attention to scope, duration, ownership, and the important factors.

4. For boys who have completed one or more years of agriculture, give similar service in selecting the new project and adjusting it in the four-year program. Continue to guide and assist the boy with his previous projects which he is now conducting as continuation projects.

5. Set aside a definite time in each day or each week for project study in each class group. Guide and help the boys either as individuals or as project groups during these periods. Here is opportunity for most effective teaching.

6. Provide the boys with project record books and make a careful class analysis of the book by studying its instructions.

7. Teach project record keeping before any boys start their projects or enter any records in the project record books. This can be done by mimeographing in paragraph form the details of a very complete project record having each boy enter them in a cheap, mimeographed project record book as a class practicum.

8. Have as many boys as can consistently do so start their projects in the fall in order to secure full year records and in order to vitalize classroom work.

9. Carefully check all project record entries, especially for freshmen, before they are placed in the record books. During the early stages of the project, have the boy make his project entries on tablet paper, clipped in his record book, until you have inspected and approved them.

10. In order to prevent the omission of important items from the record, have the boys help you to compile for each type of project represented, a complete list of charges, credits, and other items of information that could possibly be entered in such a project. Have each boy clip in his project record book a copy of the list pertaining to his project and check his entries by it frequently.

11. Prepare project analysis sheets covering each type of project under way, and once each month have each boy make an analysis of his project records. As a feature of the project study period have a class study and comparison of these analyses.

12. Visit each project early in its development and as frequently as its nature requires. Have year round project activities and year round project supervision. Make each project visit worth while by teaching something concerning the projects as well as supervising the boys' work. Always inspect and check the project record. Leave a definite record of suggestions and instructions. A carbon copied check list may be convenient for this purpose.

13. When closing project records have each boy make a financial summary of his record on tablet paper and check it carefully. Have him clip this in his record book. Have

all boys exchange books, each boy auditing the record of another boy having the same type of project. Accept project record books only when checked by the owner and certified by another boy.

14. In case the survey of the community reveals the fact that animal enterprises are leaders in economic importance, resulting in the fact that boys select animals for their first two projects, (e. g. dairy calves first year and poultry the second year) urge the boys to conduct some kind of supplementary crop project, such as gardening, the first or second year in order to make a background for work in the crop phases of the cross-section instruction.

15. Develop a program whereby boys will get experience in a wide variety of approved farm practices, outside of those covered in their regular project programs, and arrange to give due recognition for the same through some system of grouping or credits.

E. Teaching Procedure and Classroom Management.

1. Devote each class session (except for project study period) to class instruction, laboratory practicums, field trips or shop work, according to the annual plan. Refer to the plan frequently in order to be prepared for each new feature of work. Revise the annual plan as circumstances require.

2. Study authorities on lesson assignment, supervised study and recitation and put the information into practice. The good teacher trains pupils to think and reason. Someone has well said, "Teaching is lighting a lamp, not filling a measure."

3. Make careful preparations for every recitation and every class activity.

4. Carry out all laboratory practicums planned. Have materials and equipment on hand. Do not substitute notebook work for practice, but keep notes on major points.

5. Carefully plan, arrange for, and conduct all worthwhile field trips. Make each trip a purposeful, teaching, boy-participating event, not a sight-seeing tour. Trips to

study best herds, best farms, best poultry plants, etc., are desirable for setting up ideals but should not be the only kind conducted. Trips to average farms in the community give opoprtunity for much good teaching. Trips to the homes of members of the class give opportunity for special service to the patrons.

6. Maintain order and command attention in all class activities. Good discipline and full attention are essentials to good teaching.

F. Farm Mechanics Shop and Equipment.

1. Secure a suitable room of adequate size, located at grade or above and having standard light and ventilation facilities. Provide eight foot double doors entering one end of the room. An outside shop building may be advisable.

2. Provide suitable benches and vises for woodwork, iron work, etc., cupboards or a tool room for storing tools and supplies, and other major articles of equipment for carrying out a complete course in farm mechanics. A forge with a suitable flue and accessories is very desirable and should be located in a corner of the concreted part of the room opposite the double door. Locate other articles of equipment so as to use floor and wall space to the best advantage.

3. Secure suitable space or build suitable racks for lumber and other bulky supplies. Provide shelves, various sized pigeon holes, or other facilities for storing individual shop projects between shop periods.

G. Farm Mechanics Instruction.

1. Organize a two-year and four-year course in farm mechanics, the two-year course giving all boys the fundamentals in the subject, the four-year course giving the four-year boys more advanced and more specialized training.

2. Secure lists of repair jobs and new construction jobs from the pupils' homes in order to make the farm mechanics instruction meet the needs of the community.

3. Secure similar lists of jobs that need to be done for the school.

4. Adjust these jobs as well as possible into the farm mechanics program. Arrange the units of instruction on a rotating basis in order to economize on the number of tools needed.

5. Make careful preparation for each shop period, especially if there is new work to be covered. Teach systematically in all phases of farm mechanics. It is fully as important that good teaching be done in this subject as in any other phase of agriculture.

6. Demand good workmanship in all shop work.

7. See to it that each pupil receives instruction and practice in every phase of the farm mechanics course.

H. Records.

1. Keep a daily record of important activities based on the information requested in the annual report of activities. Compile the annual report at the end of June covering activities from the first of the preceding July.

2. As soon as all projects are selected compile a preliminary project report indicating the project of intent of each pupil.

3. Organize a Farm Mechanics Record whereby the work of each pupil can be systematically checked and credited.

4. Organize a permanent individual record card which will include the following: (a) A record of the pupil's name, date of birth, parents' name, address, size of farm, type of farming, etc.; (b) A record of grades and credits; (c) A record of the post-high school educational, farm or other experience of the individual with sufficient space for several successive records.

I. Related Activities.

1. Organize and conduct a Farmers' Short Course or evening school of at least 10 lessons setting it up on a conference of farmer participation basis. Conduct as many of the lessons personally as possible.

2. Organize and conduct a Junior Project Program. Enroll

sixth, seventh, and eighth grade pupils. Furnish them with lists of suitable bulletins for instruction. Arrange for some type of junior project record book and instruct pupils how to keep records. Supervise the junior projects as systematically as possible.

3. Organize and conduct a Community Day or Junior Fair as a means of exhibiting vocational and junior project products. Organize and assist committees to handle the various features of the event.

4. Encourage and assist the vocational pupils in organizing and conducting a chapter of F. F. A.

5. Encourage and assist pupils in entering exhibits at the State Farm Show.

6. Organize a vocational demonstration, or group of demonstrations from which to choose the best, and after presenting it before various local organizations for practice purposes enter it in the competition for a place at the Farm Show.

8. Organize and train teams for the various contests at Future Farmers' Week.

9. Develop and maintain systematic local publicity for vocational work through newspaper, the school paper, store window exhibits, etc.

10. Encourage some type of vocational activity for vocational pupils who participate in Commencement programs.

SUMMARY OF NEED FOR REORGANIZATION OF AGRICULTURAL EDUCATION IN PENNSYLVANIA

In order to get a clearer picture of the bearing this study has, up to this time, upon the "Need for Reorganization of Agricultural Education in Pennsylvania," it may be well to review briefly the salient features supporting the thesis of Chapter Six.

The following points are particularly germane to the problem of need as upheld in this dissertation:

1. The status of agriculture in Pennsylvania justifies the emphasis placed upon the part that education should play because:

(a) Agriculture is the most important in point of investment and the most extensive single industry in the State.

(b) Specialization in a number of farm enterprises is becoming more and more an indispensable aspect of farming.

(c) Agriculture represents a larger investment in capital than either manufacturing or mining.

2. The present status of agricultural education in Pennsylvania reflects needs still to be met, for:

(a) Agricultural centers are poorly distributed in Pennsylvania.

(b) Agricultural centers are insufficient in number to serve adequately the farm population.

(c) Expansion is necessary to meet the growing interest in home project work.

3. The types of education now in vogue in Pennsylvania for training in agriculture should be extended to make possible:

(a) The proper education of boys who wish to continue work of a college grade level.

(b) The proper education of boys in practical experience and information that can be utilized in post high school years.

4. The Federal and state legislative bodies recognize the need, and by extending financial aid challenge local communities to meet their own needs.

5. The amount of money spent for agricultural education is exceedingly meager. Approximately three-tenths of one per cent. of the money spent for education in the United States goes for agricultural education.

6. Money expended for this type of education serves certain areas only, whereas, funds appropriated for agricultural education should serve all agricultural sections of the State on an equitable basis.

7. The annual demand for well-trained young farmers to replace men who cease farming must be met by extending education to a greater number of boys. At the present time the output from our vocational departments is about 10 boys for the

annual turnover of every 100 farmers. Only several counties are meeting this need satisfactorily.

8. The fast moving economic and social changes of recent years call for training that may help the future farmer to make necessary adaptations adequately.

9. Vocational instability in the occupation of farming may be greatly reduced through proper training.

10. Until agricultural education is on an absolute par with academic training, the need is not fully met.

11. That part of the population that shifts from rural to urban, and to rural communities again, suffers great economic handicaps. A program of agricultural education is necessary to help in remedying this condition.

12. In addition to the comprehensive view of the great problem of need from the standpoint of the general status of agricultural education and certain economic and sociological conditions, there are certain specific needs that center upon the school in terms of much needed facilities and improvements. They relate to the following:

(a) Classroom and laboratory.
(b) Teaching materials.
(c) Organization of the course.
(d) Organization of project work.
(e) Instruction.
(f) Farm mechanics, shop and equipment.
(g) Records and related activities.

It is believed that the needs stated above fully justify the reorganization of education in vocational agriculture.

CHAPTER VII

DETERMINANTS FOR A PROGRAM OF AGRICULTURAL EDUCATION

Farm Enterprises

It is important that local high schools attempt to serve the farm population on the basis of the possibilities inherent in their immediate localities. For example, a community adapted to fruit growing and not to the production of small grains, looks to its high school for training in fruit growing and all that is akin to it. It would be disappointing, were the school to propose training in the production of small grain at the expense of its major interest, fruit production.

In accordance with the principle that the curriculum and the plan for an agricultural program for certain localities should grow out of an analysis of the major farm enterprises of those localities, the following study was made. The following table was prepared with the hope that it may assist the reader in determining readily what farm enterprises should be given emphasis in building the agricultural education program. Such a service study should be a valuable guide to the educator.

Undoubtedly, value and acreage of major farm enterprises should constitute a reliable index of major farm enterprises as to the place training in the various enterprises should have in the program of the school.

Two control factors were used in determining whether or not a farm crop might be called a major enterprise. If a crop occupied one-fifth of the crop land and exceeded ten times the acreage in value, it was considered major. And again, if the value of the crop exceeded ten times one-fifth of the crop land of the county, even though less than one-fifth of the land was occupied by that particular crop, it was considered major. The following table shows the major crops by counties as of the year 1930.

TABLE XXIV. MAJOR FARM ENTERPRISES BASED ON VALUE AND ACREAGE OF PRINCIPAL CROPS IN PENNSYLVANIA, 1930[1]

County and District	Corn	Wheat	Oats	Potatoes	Tame Hay	Tobacco	Apples
Crawford	*		*	*	*		
Erie	*		*	*	*		
Forest			*	*	*		
Mercer	*		*	*	*		
Venango			*		*		
Warren			*	*	*		
NORTHWESTERN							
Bradford	*		*		*		
Cameron				*	*		
Clinton	*	*	*	*	*		
Elk			*	*	*		
Lycoming	*	*			*		
McKean					*		
Potter		*		*	*		
Sullivan	*	*			*		*
Tioga		*		*			
NORTH CENTRAL							
Lackawanna	*			*	*		*
Susquehanna	*	*		*	*		
Wayne	*			*	*		*
Wyoming	*	*		*	*		*
NORTHEASTERN							
Armstrong	*				*		
Beaver	*				*		
Butler	*		*	*	*		
Clarion			*		*		
Indiana	*		*		*		
Jefferson			*	*	*		
Lawrence	*		*		*		
WEST CENTRAL							
Blair	*				*		
Cambria			*	*	*		
Center	*	*	*	*	*		
Clearfield	*		*	*	*		
Columbia	*	*	*	*	*		
Dauphin	*	*	*	*	*		
Huntingdon	*				*		

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[1] Based upon Agricultural Statistics, pp. 10-32, Bulletin No. 511, Vol. 15, No. 4, Pennsylvania Department of Agriculture, 1930-1931.

TABLE XXIV—(Continued)

County and District	Corn	Wheat	Oats	Potatoes	Tame Hay	Tobacco	Apples
Juniata	*	*	*		*		
Mifflin	*	*	*		*		
Montour	*	*	*		*		
Northumberland	*	*	*	*	*		
Perry		*	*		*		
Snyder	*	*	*		*		
Union	*	*	*		*		
CENTRAL							
Carbon	*			*	*		
Lehigh	*	*		*	*		
Luzerne	*			*	*		*
Monroe	*			*	*		
Northampton	*	*		*	*		
Pike					*		
Schuylkill	*	*	*	*	*		
EAST CENTRAL							
Allegheny					*		
Fayette	*				*		
Greene	*				*		
Somerset	*		*	*	*		
Washington	*		*		*		
Westmoreland	*		*		*		
SOUTHWESTERN							
Adams	*	*		*			*
Bedford	*	*			*		
Cumberland	*	*			*		
Franklin	*	*			*		*
Fulton	*	*			*		
York	*	*		*	*		
SOUTH CENTRAL							
Berks	*	*	*	*	*		
Bucks	*	*		*	*		
Chester	*	*			*		
Delaware	*			*	*		*
Lancaster	*	*		*	*	*	
Lebanon	*	*	*	*	*		
Montgomery	*	*		*	*		
Philadelphia							
SOUTHEASTERN							
Total	52	32	33	37	64	1	8

To summarize the foregoing table, it should be noted that corn is a major enterprise in 52 counties; wheat in 32 counties; oats in 33 counties; potatoes in 37 counties; tame hay in 64 counties; tobacco in one county; and apples in eight counties.

Such crops as barley, rye, buckwheat, grapes, peaches, and pears should not be overlooked. They should receive ample emphasis in the curriculum as contributory or minor crops. That is, a curriculum must not be planned without regard for their importance.

When counties are broken up into local units and communities, each unit must decide for itself what is considered major in that particular community. The local situation taken into account each year, subjected to a careful inventory, would serve as a very reliable guide in helping the school to fit its program into the pattern best suited for its constituency.

Counties which have a number of major farm crop enterprises must plan a comprehensive and varied program. There is need, also, of a very flexible type of program in communities where there is a wide scope of interests.

ANALYSIS FACTORS

Table XXV is designed to assist the reader in determining specifically and concretely the present situation in each county of Pennsylvania by presenting essential analysis factors as bases for the determination of recommendations for a program of agricultural education for each county.

The ten factors included in the table are: major type farm; number of farms; crop land in acres; appropriations from Federal, state and local sources; cost per pupil; present standard departments; proposed additional departments; total standard departments; itinerant teachers and supervisors; proposed itinerant teachers and supervisors.

The "major type farm" factor was determined by the number and type of farms by tenure of operators as given in the 1930 United States Agriculture Census. The number of farms was taken from the 1930 Census. The crop land in acres was taken from agricultural statistics compiled by the State of Pennsylvania.

Affidavits filed by the Vocational Bureau gave the information on appropriations. These appropriations are as of the year ending 1935. The cost per pupil was determined by taking the average of the three-year cost per pupil. These statistics were furnished by the Department of Public Instruction. The 1935 issue of "School Finances in Pennsylvania" gives pupil costs for the years 1932, 1933, and 1934. These costs were worked out on the basis of total expenditures per pupil in average daily attendance in third and fourth class school districts by the Agricultural Education Bureau of the Department of Public Instruction.

The following table sets forth for the program-maker a number of significant facts. The interpretation of the situation relating to a few of the counties will be sufficient to give the reader a picture which should serve as a guide in interpreting the situation for all the counties.

In general, it may be clearly seen that there is a wide variation in the factors for the various states. It may also be noted that counties whose per pupil costs are extremely high may not be maintaining any agricultural education. Others, which have a rather extensive agricultural program, may have comparatively low per pupil costs.

Returning to an examination of several counties one finds that Adams County, for example, has three types of farming that may be considered of a major type, namely: general, poultry, and dairy. The number of farms, which exceeds 3,000, would appear to indicate the need of more than one standard department of agricultural education in Adams County. The Federal, state, and local appropriations combined are almost negligible when the ability to support agricultural education is taken into account. Only about $150 per thousand rural farm population "is being spent for agricultural education." Also the type of farming particularly could very appreciably benefit by an extended county program of vocational agriculture. Therefore, it is recommended that four additional standard departments be organized.

Clearfield County to date has no standard departments of agricultural education. It is quite obvious that such are needed,

TABLE XXV. ANALYSIS FACTORS AS BASES FOR THE DETERMINATION OF RECOMMENDATIONS FOR A PROGRAM OF AGRICULTURAL EDUCATION FOR EACH COUNTY OF PENNSYLVANIA

County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(a) Adams	General Poultry Dairy	3333	173,050	$ 2,000.00	$ 72.77	1	4	5		1
(b) Allegheny	General Dairy Truck	2935	102,235	6,003.00	108.30	1	0	1	1	
(b) Armstrong	General Dairy Poultry	2663	127,258	4,030.00	63.26	2	3	5		
(b) Beaver	General Dairy Poultry	1937	80,873	1,710.00	96.29	1	0	1		
(a) Bedford	General Dairy	3184	158,097	3,644.00	64.60	3	3	6		1
(a) Berks	General Dairy Poultry	5359	282,986	3,903.33	101.83	3	6	9		1
(b) Blair	General Dairy Poultry Fruit	1608	81,521	2,070.00	65.63	1	4	5		1

(a) Major agricultural. (b) Medium agricultural. (c) Minor agricultural.

TABLE XXV—(Continued)

County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(a) Bradford	Dairy General Poultry	4667	240,989	16,907.20	99.49	8	0	8	1	
(a) Bucks	Dairy General Poultry	4360	175,833	0	86.28	0	7	7		
(b) Butler	General Dairy Poultry	3717	153,193	7,458.00	67.18	2	3	5		
(c) Cambria	Dairy General Poultry	2183	86,019	0	71.40	0	2	2		
(c) Cameron	General Dairy	195	5,037	0	80.58	0	1	1		
(c) Carbon	General Crop Specialty Dairy	736	33,109	0	89.82	1	1	2		
(c) Center	General Dairy	1875	127,117	5,700.00	68.11	2	5	7	1	
(a) Chester	General Dairy Crop Specialty Poultry	4559	216,675	13,018.50	116.27	5	4	9	1	

TABLE XXV—(Continued)

	County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(b)	Clarion	General Dairy	2167	112,338	1,704.00	62.31	1	4	5		
(c)	Clearfield	General Dairy Crop Specialty	2753	101,549	0	51.04	0	2	2		
(c)	Clinton	General Dairy Crop Specialty	853	45,654	1,860.00	70.10	1	1	2	1	
(a)	Columbia	General Dairy Crop Specialty	2280	121,562	12,366.00	73.81	6	3	9	1	
(a)	Crawford	Dairy General Crop Specialty	5518	221,076	10,694.00	89.47	5	3	8	1	
(a)	Cumberland	General Dairy Poultry	2932	178,792	6,290.00	75.25	3	2	5	1	
(b)	Dauphin	General Dairy Poultry	2299	135,718	8,444.00	78.42	4	3	7	1	
(b)	Delaware	Dairy General	689	23,834	0	169.81	0	1	1		

TABLE XXV—(Continued)

County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(c) Elk	General Dairy	789	24,643	0	87.15	0	1	1		
(b) Fayette	General Dairy Poultry	3364	100,591	0	65.36	0	2	2		
(a) Erie	Dairy General Fruit	4885	189,244	11,140.00	92.97	4	1	5		1
(c) Forest	General Truck	337	11,735	0	96.13	0	1	1		
(a) Franklin	General Dairy Cash-grain	3536	233,609	6,963.00	68.17	4	3	7		1
(a) Fulton	General Dairy	1195	64,961	0	79.37	0	1	1		
(a) Greene	General Animal-Specialty Dairy	2741	90,634	5,535.00	77.11	2	0	2		1
(b) Huntingdon	General Dairy	1771	109,985	2,200.00	66.01	1	3	4		1

TABLE XXV—(Continued)

County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(b) Indiana	General Dairy Poultry	3058	159,947	3,870.00	58.27	2	3	5		1
(b) Jefferson	General Dairy Crop Specialty	2450	112,843	4,557.00	59.69	2	3	5		1
(b) Juniata	General Dairy Poultry	1319	73,527	0	55.19	0	2	2		
(b) Lackawanna	Dairy General Poultry	1498	45,701	1,980.00	85.37	2	1	3	1	
(a) Lancaster	General Crop Specialty Dairy	9706	380,536	6,287.50	66.29	3	9	12		1
(a) Lebanon	General Dairy Poultry	2203	117,669	5,400.00	74.89	3	3	6	1	
(a) Lawrence	Dairy General Poultry	2236	87,314	1,704.00	65.62	1	2	3		

TABLE XXV—(Continued)

County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(a) Lehigh	General Crop Specialty Dairy	2325	117,770	0	94.01	0	5	5		
(c) Luzerne	General Dairy Crop Specialty	2385	79,590	3,600.00	102.76	2	0	2		1
(c) Lycoming	General Dairy Cash-grain	2710	144,662	4,335.00	69.19	2	2	4	1	
(c) McKean	Dairy General	1081	40,607	2,400.00	111.87	1	2	3		
(a) Mercer	Dairy General	3967	154,812	2,854.60	77.90	1	4	5		1
(b) Mifflin	General Dairy	1107	63,953	1,900.00	66.93	1	1	2		
(c) Monroe	General Dairy Poultry	1370	50,534	1,125.00	108.15	1	2	3		1
(b) Montgomery	Dairy Poultry General	3360	124,478	6,460.00	133.21	3	4	7	1	

TABLE XXV—(Continued)

	County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(a)	Montour	General Dairy	754	46,352	4,344.00	72.07	2	0	2		
(a)	Northampton	General Dairy Poultry	2227	120,550	0	73.08	0	4	4		1
(a)	Northumberland	General Dairy General	2143	122,358	3,804.00	99.64	2	2	4	1	
(b)	Perry	Dairy Poultry	1861	105,432	2,160.00	62.55	1	2	3		
(c)	Philadelphia										
(c)	Pike	General Poultry	440	9,926	0	146.54	1	1	2		
(c)	Potter	General Crop Specialty	915	80,032	4,100.00	83.31	2	2	4	1	
(c)	Schuylkill	General Crop Specialty Poultry	2291	113,600	1,860.00	113.94	2	2	4		
(a)	Snyder	General Poultry	1315	84,908	3,504.00	65.08	2	1	3		

TABLE XXV—(Continued)

County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(a) Somerset	General Crop Specialty Poultry	2716	164,242	7,800.00	55.40	3	1	4		1
(c) Sullivan	General Poultry	490	25,197	1,704.00	83.09	1	0	1	1	
(a) Susquehanna	General Poultry	1096	135,555	10,253.00	94.08	5	0	5		1
(b) Tioga	General Crop Specialty Poultry	1199	188,202	9,630.00	94.10	4	2	6		1
(b) Union	General Poultry	768	70,893	4,032.00	64.56	2	0	2		
(c) Venango	General Poultry	1411	69,063	1,704.00	94.58	1	0	1		
(c) Warren	Dairy General Poultry	1999	61,256	4,100.00	93.91	2	3	5	1	
(a) Washington	Dairy General Animal Spe.	4274	174,903	9,885.00	78.91	3	2	5		1

TABLE XXV—(Continued)

County	Major Type Farm	Number of Farms	Crop Land (Acres)	Appropriations: Federal, State, Local	Cost per Pupil (All Education)	Present Standard Depts.	Proposed Additional Depts.	Total Standard Depts.	Itinerant Teachers and Supervisors	Proposed Itinerant Teachers and Supervisors
(a) Wayne	Dairy Poultry General	2908	87,497	6,655.50	83.14	3	1	4	1	
(b) Westmoreland	General Dairy Poultry	4712	195,536	23,272.50	75.39	10	2	12	1	
(b) Wyoming	Dairy General Poultry	1409	54,571	5,300.00	85.07	3	2	5	1	
(a) York	General Poultry Dairy	7643	330,584	7,200.00	67.00	3	3	6	1	

when the type of farming, the number of farms, and the land in farms are taken into account. On the other hand, the cost per pupil is so moderate that the introduction of agricultural departments of education should not make their support cumbersome. In particular, dairy farming and crop-specialty farming call for more and more specialized operation and management. Clearfield County does not benefit by state and Federal appropriations because there is no local effort invested in this type of education. The cost per pupil, being low, should be an incentive to the local community to organize and maintain at least two standard departments of agricultural education. This would serve to give training to boys and girls interested and engaged in agricultural pursuits.

Lancaster County leads in number of farms and crop land. Despite this leadership in the agricultural industry, Lancaster Country has only three standard departments of vocational agriculture. This County is outstanding in general farming, crop-specialty farming, and dairy farming. The cost per pupil is comparatively low. Considering the need for agricultural education in this county it is believed that nine additional standard departments should be organized. The combined Federal, state, and local expenditures for agricultural education amount to approximately $150 per thousand rural farm population.

Westmoreland County has set a commendable pace in her effort to provide education that is meant to serve the interests of the rural farm population. The types of farming which lead are such that may derive real and practical benefits from agricultural schools, but which also may aid in making the school what it should be, so that it may in turn best serve the farm boy and the farm operator. Dairying and poultry raising can readily be made the laboratory for the school.

In Westmoreland County interest has been growing, and the present status of agricultural education indicates a continued interest. About $730 per thousand rural farm population is spent for agricultural education annually. There are ten standard departments of vocational agriculture. Although two more are recommended, this county has approached a standard unexcelled by any other county. The per pupil cost is very low considering the program of education in operation. At the same time this county benefits greatly by the aid of Federal and state funds as a result of her local effort.

The reader will observe a wide variation in per pupil costs, also a wide variation in appropriations for the various counties. Another observation worthy of attention is the unequal distribution of funds which may be attributed to the indifference of various counties in Pennsylvania. For the 137 present standard departments there are an additional 147 standard departments proposed. According to this, vocational agriculture has thus far met approximately half of the present needs throughout Pennsylvania.

TYPES OF TRAINING

In addition to the foregoing determinants, the writer attempted to find out what the county farm agents of Pennsylvania think about various aspects of the educational program. Since the county farm agents make direct contact with the farms of their respective counties, they were asked to name the livestock enterprises as well as the farm crop enterprises that should be stressed most and are of the most importance. They were also asked to check 12 items covering kinds of training that may be offered in an agricultural course. These were to be checked on the basis of importance. They were asked to check them, also, on the basis of the assumption that all the farm boys of high school age in their respective counties have an opportunity to attend a vocational agricultural school.

Of a total of 71 county farm agents and assistant county farm agents only 22 returned the questionnaire. In spite of this discouraging result, the writer believes that those who did respond are sufficiently representative to give the reader an intelligible picture of the course the county farm agents think educators should take in planning a program.

On the question "What kind of livestock enterprises should be stressed mostly in your county at the present time?," the following are named in order of importance: dairy, poultry, swine, sheep; and horses and cattle of equal importance.

On the question of leading farm crop enterprises, corn, potatoes, hay, wheat and small grains lead. Fruit and vegetables were also included among the list of leading farm crop enterprises.

The following table summarizes the responses on types of training:

TABLE XXVI. TYPES OF TRAINING

Item	Very Important	Important	Not Important	Total
1. Training in farm management	18	4	0	22
2. Training in livestock	10	12	0	22
3. Training in soil	14	6	2	22
4. Training in shop and engineering	1	17	3	21
5. Training in study of diseases—prevention and cure	9	11	2	22
6. Training in business practice	12	10	0	22
7. Training in farm and home improvement	2	19	1	22
8. Training in selection and purchase of livestock and farm crop seeds	6	16	0	22
9. Training in marketing	11	11	0	22
10. Training in cooperative organization	3	16	3	22
11. Training in leadership activities	10	12	0	22
12. Training in the selection and purchase of farm machinery and equipment	2	14	6	22
Total	98	148	17	263

From the aggregate of 263 responses, 98 fall under the caption "very important"; 148 under "important"; and 17 under "not important." The types of training that lead, in order of importance, under the caption "very important" and which also lead over the others under the remaining two captions are: (1) Training in farm management; (2) Training in soil; (3) Training in business practice. Those leading in like manner under the caption "important" are: (1) Training in farm and home improvement; (2) Training in shop and engineering; (3) Training in cooperative organization and (4) Training in selection and purchase of livestock and farm crop seeds (on a par); (5) Training in the selection and purchase of farm machinery; (6)

Training in livestock and (7) Training in leadership activities (on a par); (8) Training in study of diseases—prevention and cure.

None lead under the caption "not important." Only half of the items received any consideration of not being important. Of the total number of responses about 6.5 per cent. indicate nonimportance of the items thus marked.

On the basis of the foregoing table emphasis should be placed upon the 12 types of training in the following order: (1) Farm management; (2) Business practice; (3) Livestock and (4) Leadership activities (equal); (5) Marketing; (6) Selection and purchase of livestock and farm crop seeds; (7) Soil; (8) Farm home and improvement; (9) Study of diseases—prevention and cure; (10) Cooperative organization; (11) Shop and engineering; (12) Selection and purchase of farm machinery and equipment.

PRESENT PRACTICES

Another potent factor in determining a program of agricultural education is the extent to which farm practices figure in the instruction offered in the local agricultural school.

"A recent study by Kiltz showing to what extent the kinds of supervised farm practice carried on by the pupils reflected the major farm enterprises of the home farms and to what extent the teachers taught in terms of these farm practices is indicative of a rapidly developing point of view."[2]

The writer made a study of the extent to which agricultural teachers and supervisors of Pennsylvania, of which there are a total of 204, used certain practices. About 75 per cent. of the questionnaires were returned in one form or another. Some responses were difficult to read. Some were not given in exact accordance with the captions. This necessitated the use of personal judgment in classifying such types of responses. Care was taken in doing this.

The questionnaire included 12 items which it is believed are significant in the teaching program. This study is not concerned primarily with the validity of these practices but rather the extent to which they are in force. The teacher or supervisor may find it of great value to know present trends in his own special field. The findings may also suggest possibilities of which he was formerly totally unaware. Usage of practices, in this study, is considered the measure of practicability. The following table is a summary of the study.

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[2] Whipple, Montrose Guy (editor), Thirtieth Yearbook of the National Society for the Study of Education, Part I, The Status of Rural Education, Public School Publishing Co., Bloomington, Ill., 1931, p. 147.

TABLE XXVII. PRACTICES OF AGRICULTURAL TEACHERS AND SUPERVISORS IN PENNSYLVANIA

Practices	Used Extensively	Used in a Limited Way	Not Used	Total
1. Made animal surveys for school use	[3]34	90	16	140
	[4]24.3	64.3	11.4	100
2. Made crop surveys for school use	38	84	17	139
	27.4	60.4	12.2	100
3. Made service appliance surveys	8	54	67	129
	6.2	41.9	51.9	100
4. Used census reports	61	73	7	141
	43.2	51.8	5	100
5. Cooperated with county agricultural agent	64	60	13	137
	46.7	43.8	9.5	100
6. Received information from grain dealers, stockbuyers, merchants, bankers and other local citizens	52	80	7	139
	37.4	57.6	5	100
7. Used bulletins issued by own agricultural college	132	9	0	141
	93.6	6.4	0	100
8. Used bulletins from other states	73	67	1	141
	51.8	47.5	.7	100
9. Used specialists from the college	21	95	21	137
	15.3	69.4	15.3	100
10. Studied local types of farming	101	38	1	140
	72.1	27.2	.7	100
11. Applied results obtained from study and summarization of facts received	73	60	4	137
	53.3	43.8	2.9	100
12. Used memoranda of desired changes to improve course of study and teaching plan	79	55	4	138
	57.2	39.9	2.9	100

[3] Number of responses.

[4] Per cent.

Interpretation

That animal surveys in 88.6 per cent. of the cases are made for school uses, either to a great or limited extent, shows the value that educators attach to this method. The use of crop surveys for school purposes is almost equal to the use of animal surveys.

Teachers and supervisors do not seem to consider service appliance surveys as being very practical. Over half of them do not use them at all, while most of the remaining number use them in a very limited way.

About 95 per cent. of the teachers and supervisors use census reports, at least to some extent. Less than half of these, however, seem to use them extensively. About 90 per cent. of them work with the county farm agent. Almost 10 per cent., apparently, do not cooperate with the farm agent.

About 95 per cent. receive information, for school use, from business men of various kinds and other local citizens. All the teachers and supervisors, who responded, use the bulletins issued by their own state college. This makes very significant the service rendered by the State Agricultural College. Almost 94 per cent. of the total number use these bulletins extensively. About 99 per cent. use bulletins from other states, over half of them using these bulletins extensively.

About 85 per cent. of the teachers and supervisors make use of the specialists from the agricultural college. Almost 70 per cent. use them only in a limited way, while about 15 per cent. do not use them.

The response given in reference to studying local type of farming for school use substantiates the writer's contention that this should be a primary method employed in providing curriculum material for the local school. About 72 per cent. report using this extensively, while less than one per cent. report not using it at all. About 97 per cent. report that they apply the results they obtain from the study and summarization of the facts they receive. To about the same extent they use memoranda of desired changes to improve the course of study and their teaching plan.

The following practices lead under the caption "Used extensively," (1) Cooperated with county agricultural agent; (2) Used bulletins issued by agricultural college of own state; (3) Used bulletins from other states; (4) Studied local types of farming; (5) Applied results obtained from study and summarization of facts received; (6) Used memoranda of desired changes to improve course of study and teaching plan.

Under the caption "Used in a limited way" the following practices lead: (1) Make animal surveys for school use; (2) Make crop surveys for school use; (3) Use census reports; (4) Received information from grain dealers, stock buyers, merchants, bankers and other local citizens; (5) Used Specialists from the college.

Under the caption "Not used" the only practice that leads is "Made service appliance surveys."

*On the basis of questionnaire returns emphasis should be placed upon the various practices in the following order:

1. Use bulletins issued by agricultural college of your own state.
2. Study local types of farming.
3. Use memoranda of desired changes to improve the course of study and the teaching plan.
4. Apply the results obtained from the study and summarization of facts received.
5. Use bulletins from other states.
6. Cooperate with the county farm agent.
7. Use specialists from the college.
8. Make animal surveys for school use.
9. Make crop surveys for school use.
10. Get information from local business men and other local citizens.
11. Use census reports.
12. Make service appliance surveys.

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*The leading practices under the caption "Extensive" placed in descending order followed by the leading practices under the caption "Limited" placed in descending order followed in like manner by the leading practices under the caption "Not used."

"The following excerpts from a state bulletin typify the aims of the majority of the states, and also their actual practices:

In any community, therefore, the course objectives are determined by (a) the type or types of farming in which the farmers are engaged and (b) the local related agricultural occupations such as herdsman, farm manager, milk tester . . . . . . Such courses (as teachers prepare) should be organized so as to make the fullest possible use of the pupils' experience gained on the home farm as well as the experience of the successful farmers in the community . . . . . . In the preparation of the courses of study consideration should be had for the following:

1. Study the local types of farming, and related occupations in order to determine the course objective.
2. Summarize the facts as suggested above and assign to each year's work the enterprises that may be most appropriately and effectively studied that year.
3. Break down the enterprises to be taught in any given year into the component jobs which the farmers need to perform during the year in carrying on the enterprises.
4. Arrange the enterprises and farm jobs in accordance with the seasonal sequence operations on the farm.
5. Get acquainted with the pupils who have enrolled or who are likely to enroll for vocational instruction . . . . . . Make a systematic study of their individual interests and aptitudes, general intelligence, farm and school experiences, ages and ambitions with respect to a vocation.
6. As the work progresses, memoranda of the desired changes should be made, to the end that the actual experience of teaching the various lessons may result in the preparation of a better course of study and teaching plan for the following year."[5]

INFLUENCES OF THE F. A. A.

The influence of the "Future Farmers of America" organization in shaping the future agricultural education program must not be overlooked. It is believed that this organization is destined to become a powerful factor in the advancement of vocational agriculture. In fact, it has already proved its value in many instances.

In order to get a first-hand picture of its influence upon what may be considered major aspects* of the program of vocational agriculture, a questionnaire was prepared and sent out to all the agricultural teachers and supervisors of the State of Pennsylvania. Of the 204 sent out about 75 per cent. of the questionaires were returned. A very large number of these were checked completely. Some questionnaires were returned with several of the items unanswered. Approximately eight per cent. of the total number were returned unchecked. The statements accompanying most of those returned unchecked may be summed up as follows: (1) First year of teaching; (2) First year agriculture is being taught; (3) Have no chapter of the F. F. A. Several teachers expressed their intention of either reviving it or beginning a new organization.

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[5] Whipple, Montrose Guy (editor), Thirtieth Yearbook of the National Society for the Study of Education, Part I, The Status of Rural Education, Public School Publishing Co., Bloomington, Ill., 1931, pp. 149-150.

*Listed in subsequent table XXVIII.

A few questionnaires failed to reach their destination. The writer felt greatly encouraged by the unusual response. In some cases letters accompanied the returned questionnaires expressing keen interest in the study that is being made.

TABLE XXVIII. INFLUENCE OF THE "FUTURE FARMERS OF AMERICA" ORGANIZATION

Item	Very Great	Great	Slight	None	Adverse	Total
1. Recognition of problem of						
(a) Own project	[6]19	69.5	37.5	4	0	130
	[7]14.6	53.5	28.8	3.1	0	100
(b) Home farm	12	48	62	7	0	129
	9.3	37.2	48.1	5.4	0	100
(c) Community	13	40	68	8	0	129
	10.1	31	52.7	6.2	0	100
2. Plans for meeting problems above	7	52.5	54.5	5.8	0	121
	5.8	43.4	45	5.8	0	100
3. Scope and number of projects undertaken	18	69	34	7	0	128
	14	53.9	26.6	5.5	0	100
4. Participation in fairs and contests	58	49	19	2	0	128
	45.3	38.3	14.8	1.6	0	100
5. Participation in adult meetings	7	34	71	16	0	128
	5.5	26.5	55.5	12.5	0	100
6. Keeping records	11	60	45	14	0	130
	8.5	46.1	34.6	10.8	0	100
7. Attitude toward farming as a future business	29	60.5	39.5	0	0	129
	22.5	46.9	30.6	0	0	100
8. Home improvement	10	55	57	9	0	131
	7.6	42	43.5	6.9	0	100
9. Thrift	15	52	54	7	1	129
	11.6	40.3	41.9	5.4	.8	100

[6] Number.

[7] Per cent.

TABLE XXVIII (Continued)

Item	Very Great	Great	Slight	None	Adverse	Total
10. Cooperative enterprises	23	61	37	10	0	131
	17.6	46.6	28.2	7.6	0	100
11. Leadership	50	61	17	1	0	129
	38.7	47.3	13.2	.8	0	100
12. Other school work (academic)	5	45	64	17	0	131
	3.8	34.3	48.9	13	0	100
13. Facilitating administration of vocational agriculture	23	60	40	8	0	131
	17.6	45.8	30.5	6.1	0	100
14. Enriches formal training in vocational agriculture	22	70	34	1	0	127
	17.3	55.1	26.8	.8	0	100
15. Creating community spirit	29	55	41	5	0	130
	22.3	42.3	31.5	3.9	0	100
Total	351	941.5	774.5	123	1	2191

Interpretation

A number of significant deductions may be made from the foregoing study. These should be particularly valuable to teachers and supervisors of agricultural education as well as administrators whose responsibilities lie partially or wholly within the field of vocational agricultural education.

In the first place, the underlying philosophy of the F. F. A. organization is placing responsibility upon the pupil. Pupil activity is the keynote. The implications of the questionnaire are pupil activity and adaptation to practical situations.

Each item in the questionnaire was to be checked under one of the five captions, namely: very great, great, slight, none, and adverse. Of the total 2,191 responses only one was marked adverse; 123, none; 774.5, slight; 941.5, great; and 351, very great.

About 59 per cent. of the total number of responses fell under the caption "very great" and "great." This is significant because it shows the positive influence of the F. F. A. The most significant among the items that lead under the caption "very great" are: (1) participation in fairs and contests; (2) leadership; (3) attitude toward farming as a future business; (4) and creating community spirit. Those that lead under the captain "great" are: (1) enriches formal training in vocational agriculture; (2) recognition of problem of own project; (3) scope and number of projects undertaken; (4) leadership; (5) cooperative enterprises. Out of the 2,191 responses the column captioned "great" has a total of 941.5 points.

The items leading under the caption "slight" are: (1) recognition of problems of the community; (2) other school work (academic); (3) recognition of problems of home farm. Those leading in the column capitioned "none" are: (1) other school work (academic); (2) participation in adult meetings; and (3) keeping records.

On the basis of questionnaire returns the F. F. A. organization exerts influence successfully in the following ways:

1. It contributes most heavily to the success of fairs and contests.
2. It very definitely trains for leadership.
3. It contributes directly to the development of proper attitudes towards farming as a future business. Indirectly, if not directly, it makes for vocational stability.
4. It is a builder of community spirit.
5. It encourages expansion in scope and number of projects undertaken.
6. It promotes the keeping of records.
7. It contributes a fair share to the work of home improvement.
8. It exerts influence in the practice of thrift.
9. It develops the spirit of cooperative enterprise.
10. It assists appreciably in facilitating administration of vocational agriculture.
11. It augments and enriches formal training in vocational agriculture.
12. It aids the pupil in a significant manner in recognizing problems that have to do with his own project.

The influence of the F. F. A., however, is not so favorable in certain other aspects. These may be stated as follows:

1. Pupils seem to benefit only to a limited degree from F. F.

A. experience when it comes to recognizing the problems of the home farm and the community. However, returns show that there is some favorable influence in that direction.

2. In "plans for meeting problems of own project, home farm, and community" returns show a total of 61.5 points for "slight" and "none" as compared with 59.5 points for "very great" and "great."
3. The F. F. A. appears to contribute only a small share in getting its members to participate in adult meetings. Whether pupils of school age should participate in such meetings or not is an open question.
4. The F. F. A.'s influence on home improvement appears to be strictly limited.
5. Indications are strong that the influence of the F. F. A. on other school work (academic) is slight, to say the least, rather limited.

In the light of the items included in the questionnaire, and by the measure of total responses it is quite obvious that more can be said in defense and support of the F. F. A. than can be said to the contrary. Its possibilities are also apparent.

SUMMARY FOR DETERMINANTS FOR A PROGRAM OF AGRICULTURAL EDUCATION

Certain specific factors should determine what should control the construction of the agricultural education program. These are major farm enterprises, major type farm, number of farms, acreage of crop lands, appropriations, cost per pupil, present standard departments, proposed additional departments, the number of itinerant teachers and supervisors. In addition to these factors, special studies were made on the reaction of county farm agents as agricultural experts upon certain educational aspects, farm practices of the school community, and trends reflected in the Future Farmers of America organization.

On the basis of value and acreage of principal crops in Pennsylvania in 1930, and according to the number of counties in which the major farm enterprises occur the following lead in order: tame hay, corn, potatoes, oats, wheat, apples, tobacco.

Other crops of considerable importance, although not listed as major in this study, are: barley, rye, buckwheat, grapes, peaches, and pears.

The major types of farms according to the number of counties in which they may be found appear in the following order: 66 counties have general farming as a major type; 55 dairy; 36 poultry; 14 crop specialties; two animal specialties; two truck, and two fruit.

Consequently, there must be a flexible program to meet the strong demand for general farming. Dairying and poultry farming are also very prevalent. The status of these various types of farming should be accepted by the educator as a strong influencing factor in laying plans for the agricultural program to be put into operation in his local community.

The number of farms indicates the extent to which the major types of farming, peculiar to each county, should be recognized in planning a program. The crop land in acres serves as a guide in determining the scope of enterprise.

The appropriations, Federal, state, and local, show that a great variation in expenditures exists among the counties of Pennsylvania. Appropriations range anywhere from zero to about $23,000. This fact suggests a condition of gross inequality extant in the field of agricultural education. It also sets forth the fact that local effort to meet needs, in some instances, is not made. On the other hand certain counties are richly rewarded for their effort.

A comparison of the counties in regard to the cost per pupil shows wide differences. Apparently, a number of counties, considering the low expenditure per pupil, could well afford to support a department of agricultural education.

On the basis of existing present standard departments and proposed additional departments, Pennsylvania is meeting the needs for vocational agricultural education only about half way.

There is also need for approximately twice as many itinerant teachers and supervisors as are now in service.

The county farm agents of various counties of Pennsylvania consider importance of livestock enterprises in the following order: dairy, poultry, swine, sheep, and horses and cattle of equal importance.

They place the leading farm crop enterprises in the following order: corn, potatoes, hay, wheat, and small grains. Fruits and vegetables are given a place of importance also.

There is a definite positive relationship between the results of the study on major type farms and the responses of the county farm agents. They agree on the leading enterprises, although not in exact order of importance necessarily.

The farm agents place training in farm management at the head of the list of the 12 types of training considered. They consider least important training in the selection and purchase of farm machinery and equipment.

Of the total number of 263 responses about 6.5 per cent. indicate non-importance of the items thus marked.

The practices of agricultural supervisors and teachers in Pennsylvania strongly reflect the importance of using the agricultural resources of the community as a kind of barometer in determining the nature of the agricultural program for the local high school.

Results of a study of the "Practices of Agricultural Teachers and Supervisors in Pennsylvania" show that about 88 per cent. of them make animal surveys in order to determine local needs so as to supply courses of study accordingly; about the same number make crop surveys for school use; about 48 per cent. make service appliance surveys; about 95 per cent. use census reports; approximately 90 per cent. cooperate with the county farm agent; about 95 per cent. receive information from various business men for school use; practically all make use of bulletins published by the agricultural college; nearly all use bulletins from other states; about 85 per cent. use specialists from the state agricultural college. Less than one per cent. fail to study local types of farming; about 97 per cent. apply the results obtained from the study and summarization of facts received; about the same proportion use memoranda of desired changes to improve the course of study and the teaching plan.

These facts indicate that agricultural education tends to be highly functional in its application and seeks to adjust itself to the immediate and direct needs of the community it serves.

The "Future Farmers of America" has gained a place as a distinctive determinant in shaping the agricultural program of the future.

Its influence upon the major aspects of the program of vocational agriculture substantiates its worth. Its significance may be summarized as follows:

1. It has become a major sponsor of fairs and contests, thus enhancing the activity phase of the program.
2. It has become instrumental in making the program of vocational agriculture more successful by reason of its constructive influence upon the individual; for example,
    - (a) it trains for leadership.
    - (b) it builds proper attitudes.
    - (c) it builds community spirit.
    - (d) it promotes efficiency (for example, keeping records).
    - (e) it promotes worthy home membership.
    - (f) it encourages thrift.
    - (g) it develops the spirit of cooperation.
    - (h) it assists the pupil in recognizing his own problems.
3. It augments and enriches formal training in vocational agriculture by supplying motive power.
4. It facilitates administration of vocational agriculture.

The exhibitory function of the "Future Farmers of America" makes it one of the most reliable agencies in reflecting major farm enterprises and interests. It serves as a barometer of agricultural trends. It depicts areas of agricultural success and discloses agricultural possibilities. All these aspects have a share in determining both the policy and product entering into the program of vocational agricultural education.

The results of the analysis factors used, clearly give direction to those responsible for the program of agricultural education in the various local communities of Pennsylvania.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

In this chapter an attempt is made to summarize the findings of the study. A number of appropriate conclusions accompany the findings.

The 1930 Federal Census reveals that Pennsylvania has 172,419 farms; 53.4 per cent. of their total area is used for farming purposes. Agriculture is a major occupation in Pennsylvania. It is the most extensive single industry in the State. Agriculture represents a larger investment in capital than either manufacturing or mining.

Excluding self-sufficiency farms and subnormal and unclassified farms, the types of farming which lead according to the number of farms in order are: general farming, dairy farming, and poultry farming.

Seventy-seven and nine-tenths per cent. of the farms are operated by full-owners; 4.6 per cent. by part-owners; 1.6 per cent. by managers; and 15.9 per cent. by tenants, cash tenants and others.

The increase in value of farm property in 1930 over that of 1900 amounts to approximately 31.5 per cent. The decrease in number of farms amounts to about 23 per cent.

A classification of the counties of Pennsylvania into major agricultural, medium agricultural, and minor agricultural groups shows that 27 belong to the first group, 21 to the second group, and 19 to the third group.

The number of farms by counties ranges from 195 to 9,706. There are five counties which have less than 500 farms and only four have more than 5,000. The median for all the counties is 2204.5 farms.

Tenancy is on the decline in Pennsylvania. It has been reduced about 10 per cent. in 30 years. In Pennsylvania 15.9 per cent. of the farm operators are tenants. Pennsylvania stands twelfth among the States having the least tenancy. Maine leads with a 4.5 per cent. tenancy.

There are 184,151 farm homes in Pennsylvania which represent about 12 per cent. of all homes. Pennsylvania's population is about eight per cent. of the total population of the United States. In 1930 it averaged about 214.8 persons per square mile.

There was a decline in the total rural population for the decade of 1920 to 1930. Non-farm rural population increased 3.5 per cent. Farm rural population decreased 3.5 per cent. From a total of 1,203,772 workers farming claims 243,850. Pennsylvania has about 2.8 per cent. of the farm population of the United States.

The greatest single industry in point of investment rests upon the shoulders of about 8.8 per cent. of the total population.

The need for Vocational Agricultural Education was recognized by a committee dating back to 1837.

In 1854 an act was passed by the State Legislature incorporating a school for the education of the farmers known as "The Farmers' High School of the State of Pennsylvania." The school opened in 1859. Its purpose was to adopt a system of instruction which should embrace those departments of all sciences having a "practical or theoretical bearing upon agriculture and agricultural interests."

After 1900 the movement for secondary education in agriculture developed rapidly and broadly.

Agricultural education gained its recognition through legislation and was promoted by institutions of higher education in its early stages. Beginning with 1917 it was placed within reach of the adolescent boy and girl. It is known as education for those "below the level of college grade." All the states may benefit by the Act of 1917.

In 1929 the passage of the George-Reed Act provided further aid to agricultural education subject to the same provisions as in the Smith-Hughes Act of 1917. On June 8, 1936, the George-Deen Law was approved. It provides for the further development of vocational education by annual appropriations of $12,000,000, one-third of which goes for agricultural education.

Insufficiency in number and irregularity in location of agricultural education centers characterize the situation in Pennsylvania. The total enrollment for the various types of schools in Pennsylvania for the period 1918 to 1932 increased approximately 470 per cent. There is an average of about 20 pupils for each center. A survey for 1935-1936 discloses the following: There are 20 county advisors teaching in 129 schools; there are 58 vocational schools; and there are 90 schools having vocational agricultural departments. The centers total 277. These, however, are not all standard departments of vocational agriculture.

Facts show that pupil enrollment in 1930 represented only about one-half of one per cent. of the persons engaged in agriculture in Pennsylvania. Again, only about 35 per cent. of the fourth-class districts in Pennsylvania maintaining high schools offer agricultural education.

Home project work as it relates to major farm enterprises shows continuous and rapid progress. An increase of over 2000 per cent. of entries into the State Project Contest occurred during the decade 1924-1934.

Enrollments for farm management, farm experience and farm shop and mechanics projects are very irregular from year to year. Home project work in poultry raising, fruit growing, potato raising, truck gardening, dairying, hog raising, small grains raising, all show growth and development. The various projects, however, show advancement in varying degrees. Truck gardening project work may be said to be outstanding in development. This development of the various home projects reflects both the interest in and the significance of vocational agriculture.

One may reasonably expect project work to do the following:

1. To provide a source for instruction of a practical nature.
2. To develop skills and aptitudes needed in farming.
3. To provide practical experience in management and business practice.
4. To provide experience in detailed planning.

The types of education provided in Pennsylvania for training in agriculture are: (1) education preparing the boy to carry on work of a college grade level; (2) education providing the boy with practical experience and information; and (3) home project work meant to supplement classroom instruction.

The types of agricultural schools in Pennsylvania are: (1) rural community vocational schools; (2) joint vocational schools; (3) departments of vocational agriculture; (4) schools for unit course instruction; (5) part-time schools or classes; and (6) evening schools or classes.

The Commonwealth of Pennsylvania through the Department of Public Instruction has the sole power to administer the laws relating to vocational education. Article XXXIV, Section 3401, states the power and duty of the Department of Public Instruction. These are administrative in nature. Section 3405 defines the duties of the Bureau of Agricultural Education. Section 3406 defines vocational agricultural education. The powers of the State Council of Education are stipulated in Section 3407. It also includes the power of the State Superintendent of Public Instruction as Executive Officer who is given appointive power subject to approval of the Council. Section 3408 relates to classes in vocational agriculture. Section 3409 deals with the establishment of vocational schools. Section 3410 contains a provision for joint vocational schools or departments. Matters concerning non-resident pupils and application for admission are provided for in Section 3412. The provisions for reimbursements are presented in Section 3414. Sections 3415, 3416, 3418, 3419, and 3420 include biennial estimates, statement of expenditures, Smith-Hughes Act accepted, funds, powers of State Board of Education, respectively.

Agricultural education benefits by three sources of support; namely, Federal, state, and local. Distribution of aid should be controlled by a very efficient and desirable method. The method should stimulate educational activity beyond minimum requirements; it should encourage placement of vocational agriculture under conditions favorable for its development; it should encourage organization suitable for instruction in vocational agriculture; it should equalize financial burdens; it should be adapted to educational needs.

The increase in Federal aid from 1918 to 1933 amounts to about 474 per cent. State aid shows an increase of over 2300 per cent. for the same period. Local aid shows an increase of about 1282 per cent. for this period. Total aid amounts to an increase of 1177 per cent.

Less than one-third of the money spent for vocational education is used for vocational agriculture in the United States. In Pennsylvania for the period 1919-1933 the average annual expenditure per pupil increased from 5.3 cents to 48.5 cents. On an average 23 cents out of $74.69 was spent for agricultural education. These costs represent cost of instruction only. Since instruction costs are approximately 75 per cent. of the total costs, excluding capital outlay and debt service, it may be said that for the year 1930, for example, the cost of agricultural education per pupil (on the basis of average daily attendance) was about 27 cents.

Expenditures for agricultural education, according to a study of 25 per cent. of the counties in Pennsylvania show that agricultural education is either holding its own or is on the increase. One county, over a 15-year period increased its program of expenditure over 1000 per cent.

On the basis of total salary and rural farm population the following counties spent per thousand persons the following amounts: Adams, $150; Allegheny, $480; Berks, $200; Butler, $460; Center, $640; Clarion, $190; Erie, $540; Indiana, $210; Jefferson, $500; Lancaster, $150; Lebanon, $440; Luzerne, $340; Potter, $700; Somerset, $240; Tioga, $630; Wayne, $580, and Westmoreland, $730 which leads in expenditures for agricultural education.

As regards transportation costs, a study shows that they are not cumbersome. Where daily trips exceed 20 miles, the cost per pupil per mile may easily be less than one cent. It appears that local districts can afford to furnish transportation for pupils to the end of their high school career. Legislative action should make this mandatory.

There are three major factors of need for agricultural education in Pennsylvania; (1) Inequality of opportunity; (2) Economic and social change; and (3) Vocational instability. The Annual Descriptive Reports of the State Board of Vocational Education in addition to a survey map showing centers of agricultural education reveal striking irregularity of distribution of centers and inequality of opportunity.

A survey of the agricultural centers by counties in Pennsylvania for the year ended 1935 (on the basis of centers) shows the following:

1. The class of minor agricultural counties is meeting its agricultural educational needs about 40 per cent.
2. The class of medium agricultural counties meets its needs almost 50 per cent.
3. The class of major agricultural counties meets its needs slightly more than 50 per cent.

Economic and social change is in terms of increase in subsistence farming, increase in size of farms, decrease in farm population, increase of scientific farming, increased competition, fluctuating and uncertain markets. Other economic problems are those of sheriff sales, unemployment, and scarcity of capital.

A large percentage of students taking agricultural courses go afield into non-related occupations and non-agricultural colleges. According to the present status of occupational stability vocational training should be given to about twice the number of boys actually needed to man the farms in Pennsylvania in order to provide adequate replenishing of farm help.

In 1932 about 30 per cent. of the number of boys in all-day and day-unit schools went into other lines of work.

There is a tremendous shifting of urban and rural populations which makes for instability.

The school should plan its program so as to aid materially in the reduction of occupational instability resulting from the stress of economic and social change.

A program of reorganization has to take into account the facilities and improvements needed in vocational education. These relate to classroom and laboratory, teaching materials, organization of course, organization of project work, teaching procedure and classroom management, farm mechanics shop and equipment, farm mechanics instruction, records and related activities.

Certain specific factors enter into the act of planning an agricultural education program. From the point of view of the farm such factors as major farm enterprises, major type farm, number of farms and acreage of crop lands, must be taken into account. From the point of view of the administration of local boards and state departments of education such factors as appropriations, cost per pupil, present standard departments, proposed additional departments, number of itinerant teachers and supervisors and proposed number of itinerant teachers and supervisors, must be considered.

A study of principal crops as of the year 1930 shows that the major farm enterprises are hay, corn, potatoes, oats, wheat, apples, tobacco. Small grains and fruit may be considered important. The major types of farming are: general, dairy, poultry, and crop specialties.

The number of farms and the amount of crop land acreage indicate the extent to which each type of farming should be recognized in a program of education.

Great variations in appropriations for vocational agricultural education exist. They range from no appropriations in some counties to as high as $23,000 in one particular county annually. Thus great inequality exists. Some counties receive nothing while others are richly rewarded for their effort.

The results of a study of the costs of education in the various counties lead one to believe that the additional cost entailed by adding agricultural education to the curriculum would not be cumbersome.

On the basis of existing and proposed standard departments of agricultural education, Pennsylvania is meeting needs only about 50 per cent. The same is true with regard to the teaching staff.

The county farm agents of Pennsylvania, representing more than 30 per cent. of the total, agree, in the main, with the results of the study on major type farms in Pennsylvania. They consider farm management as the most important type of training in a list of 12 types.

The study made by the writer on the "Practices of Agricultural Teachers and Supervisors in Pennsylvania" shows that 88.6 per cent. of the teachers and supervisors reporting are using animal surveys for school use. Almost to the same extent are crop surveys used.

About 95 per cent. of the number reporting use census reports, if not extensively, at least to some extent. About 90 per cent. report that they cooperate with their county farm agent. It is believed that the county farm agents have a definite contribution to make to the educational program. About 95 per cent. receive information, for school use, from business men and other local citizens. All of them use the bulletins issued by State College. More than 90 per cent. use them extensively, which clearly indicates the service afforded by the State Agricultural College. In addition to this service about 85 per cent. of the teachers and supervisors take advantage of the service provided through specialists from the College. However, almost 70 per cent. use these specialists to a limited extent only.

Results from the questionnaire set forth the fact that a study of local types of farming is essential in providing for appropriate curriculum material for the local school. It appears that teachers and supervisors, particularly in the field of agricultural education, attach great importance to this method of curriculum construction.

Furthermore, about 97 per cent. report that they apply the results they obtain from the study and summarization of the facts they receive. To about the same extent they make use of memoranda of desired changes to improve the course of study and their teaching plan.

The excellence of pupil achievement in agricultural education should find its consummation in active participation in the "Future Farmers of America," a national organization with state organizations and local chapters. The four grades of membership based on achievement are: "The Green Hand," "Future Farmer," "State Farmer," and "American Farmer."

Results from a study, made by the writer of what the agricultural teachers and supervisors of Pennsylvania think about the influence of the "Future Farmers of America" organization, show that enthusiasm runs strongly in favor of its purpose and work.

All minor clubs in agricultural schools should be considered subsidiary to this major organization.

Significant Facts and Their Educational Implications

Since agriculture represents the greatest investment in a single industry in Pennsylvania, the school should be responsible for advancing its occupational significance and for aiding in making this investment a good one.

Tenancy produces undesirable results in farming. Increase in agricultural education and decline of tenancy occur simultaneously. Agricultural education can be expected to contribute to the gradual elimination of the tenant system.

About 12 per cent. of all homes in Pennsylvania are farm homes. Less than one per cent. of the money expended for education goes for agricultural education. Therefore, agriculture is accorded only about one-tenth the recognition it should receive through the educational route.

Annual demand for new agricultural education centers and the rapid increase in school enrollments since its inception give validity to the effort put forth to expand the educational program of farming. The same period of time has been marked by increased production and increased specialization in agriculture.

An era of scientific farming is reflected through the extensive program of project work of which the school is the chief proponent.

Agricultural education in Pennsylvania has received unceasing legislative support since its beginning. From 1918 to 1932 there was an increase in enrollment of about 470 per cent.; the increase in Federal aid was about 474 per cent. Therefore, it can be expected that effort to extend agricultural education will be duly compensated.

Geographically, centers of agricultural education in Pennsylvania are poorly distributed. A major step in the educational program is to bring about equity with respect to making this type of education available to the entire farm population. Local effort in this direction will be rewarded with Federal and state appropriations. Inequality is undemocratic. Federal and state aid are designed to eliminate such a condition.

With respect to the number of centers, Pennsylvania is meeting the need about halfway. By doubling effort this need may be largely met within a decade.

The average expenditure per pupil per year for agricultural education has increased about 900 per cent. in the period 1919-1933. The average cost per pupil for all kinds of education never exceeded an increase of 75 per cent. In this respect agricultural education has been moving about 12 times as fast as all kinds of education, which condition gives force to the alleged significance of this type of vocational education.

There is a fastmoving economic and social change which greatly affects agriculture. The school must prepare the pupil for radical changes and emergencies which require a highly developed power of adaptability. This power must be developed through education.

A study of the local types of farming provides the most reliable source for curricula materials. This source, it is generally agreed, provides the necessary and appropriate data for the educator interested in the program of agricultural education. Such data may become increasingly valuable with the use of an increasingly efficient, scientific method of handling them. This will greatly increase the reliability of the survey method.

The "Future Farmers of America" organization is the most dynamic agency agricultural education has in its service. This organization has grown to be the greatest force for publicizing and promoting agricultural education that has thus far been devised. It is an indispensable and invaluable aspect of agricultural education that must be supported and relied upon by teachers and supervisors of agriculture. It contributes heavily to the practical and social phases of the whole program of agricultural education.

It is hoped that the material presented in the foregoing study will greatly assist educators in meeting their own immediate problems as well as problems of a wider scope. Again, it is believed that this study may be used as an aid in developing the program of vocational agriculture in Pennsylvania. The presentation of this study, it is hoped, will stimulate both interest and action in regard to the problems relating to the field of agricultural education.

This study leaves undeveloped such problems as building and classroom equipment, laboratory equipment, textbooks and supplies, selection of teachers and measurement of teaching instruments and pupil learning.

It is hoped that further studies will be made with the result that valuable information may be disseminated on the problems mentioned above. By extended and continued study of the problems pertaining to agricultural education, it is believed that the ultimate aim of agricultural education, with which this study is concerned, may be realized. The ultimate aim is a more satisfactory, comprehensive, adequate and equitable system of education in vocational agriculture for adolescents in Pennsylvania.

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APPENDIX A — SIGNIFICANT CONSIDERATIONS RELATED TO THE REORGANIZATION OF AGRICULTURAL EDUCATION IN PENNSYLVANIA

Reorganization, as herein used, shall be construed as an attempt to improve and extend the program already in operation.

I. *The General Aim of Agricultural Education.*

"The aim of vocational instruction in agriculture is to fit for useful employment in agricultural pursuits. This may be interpreted to mean that the vocational course in the high school has two functions:

1. "To prepare the pupil to meet with growing efficiency and happiness the demands of a progressive vocation of farming."

2. "To meet the present and immediate agricultural needs of the pupil who lives on a farm."[1]

According to Prosser and Allen "education is the result of experience whereby we become more or less able to adjust ourselves to demands of the particular form of society in which we live and work. . . . . ."

"If the conception of education just suggested but not specifically embodied in words be accepted, then vocational education becomes that part of the experiences of an individual whereby he learns successfully to carry on any gainful occupation."[2]

The purpose of the agricultural school in Denmark, for example, is well expressed in the following statement:

"As the folk school seeks to make a better all-around farmer."[3]

The German concept is rather ably expressed in the following:

"In the training of the young people, ... the union of life and education has remained the standard of excellence. The term, educational work, is interpreted to mean, in its essentials, guidance, not drilling. And education has not been rationalized and mechanized as a molding from outside, but is a developing of methods which will enable the young person to find his own form."[4]

OBJECTIVES

The following objectives have been outlined for vocational education in agriculture:[5]

1. To produce agricultural products efficiently.
2. To market agricultural products economically.
3. To select and purchase suitable farm equipment and supplies.
4. To cooperate intelligently in economic activities.
5. To manage the farm business effectively.
6. To maintain a satisfactory farm home.
7. To perform appropriate and economic farm mechanics activities.
8. To participate in worthy rural social activities.

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[1] Principles in Making the Vocational Course of Study in Agriculture in the High School, Vocational Ed., Page 1, Bulletin No. 98, 1934, U. S. Printing Office.

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[5] Taken from the Report of Committee on Objectives in Vocational Education in Agriculture, Federal Board for Vocational Education, Misc. 1046, 1929.

9. To use scientific knowledge and procedure in a farming occupation (as contrasted with technical knowledge).
10. To exercise constructive leadership.
11. To grow vocationally.
12. To get successfully established in farming.

PRINCIPLES

In addition to the foregoing objectives, certain underlying principles, should be considered in building the agricultural curriculum.

PRINCIPLE I.—*The curriculum must embody those elements that provide for the development of student abilities in efficient farming.*

The curriculum must contain teaching materials and subject matter materials such as textbooks, reference materials, laboratory facilities, experimental activities, and other practical phases of work which actively engage the pupil in the experience of farming, either vicariously or directly. The curriculum must make provision for putting the pupil at work in exercising his abilities under consciously-controlled conditions so as to develop skills, not as the end merely, but as a means to the end of efficient farming.

PRINCIPLE II.—*The curriculum must make provision for the development of student abilities that will enable him to solve problems in general and especially those of the farm.*

The curriculum must provide content which will familiarize the student with the problems common to all, and especially with the problems common to those engaged in farming. Rural sociology should be given a very vital place in the curriculum for vocational agriculture. Problems that have to do with buying and marketing, profit and loss, overproduction, and price fluctuations must be met ingeniously. Economics, for example, may prove to be of inestimable value in enabling the student to do independent thinking in regard to problems which depend almost solely upon him for solution. Student abilities, again, must be the foundation upon which to build, through the medium of the curriculum, the problem-solving art.

PRINCIPLE III.—*The curriculum must provide for the development of student abilities which will enable him more adequately to meet and more fully to appreciate his social, personal, and civic duties as a citizen.*

To guard against the danger of teaching a vocation for vocational efficiency only, there must be definite provision made to include cultural courses in the curriculum. To carry out the principle set forth, emphasis shifts to other subjects in the curriculum. The following discussion presents the situation embodied in this principle in a very practical sense.

"All subjects such as English, Mathematics, and History required of high school students for college entrance, should be included for the regular all-day group. Even though students do not plan to go to college they should complete their requirements before graduation, so that in the event that they do decide to enter college they will have their necessary entrance requirements.

Superintendents are often criticized for not requiring their students to complete the subjects necessary for college entrance. State supervisors of agricultural education are likewise subject to criticism if they do not check the agricultural curriculum of each department to see if college entrance, credits are being secured by the students. Students not only need these academic subjects for college entrance, but also for their cultural benefits. A well-balanced education is necessary to solve the problems which a person may meet in life . . . . .[6]

The curriculum should, in part at least, provide for activity which assists the boy in becoming conscious of personal duties. Methods of work, care and use of personal possessions are very personal matters in which the student should receive direction. Organizing and directing clubs or conducting a group experiment are social matters in which the boy should be trained. Community spirit and community improvement are matters of a civic nature which the curriculum maker may not overlook.

PRINCIPLE IV.—*The curriculum must provide for the development of student abilities which will make him capable of doing independent, constructive thinking.*

Not only must a program of vocational education in agriculture serve as a pattern of logically organized material with which the student is required to become familiarized, but it must stimulate the student to project himself, beyond the leading and directing that is afforded him, into self-propelling activity, self-direction, experimentation, and discovery.

The farmer, as a rule, must make his own plans and then see to it that they are wisely executed. For example, he must know what crops are best adapted to the soil. Furthermore, he should be able to analyze his soil so that he could by scientific application suit the crops to the soil or suit the soil to the crops.

PRINCIPLE V.—*The curriculum must provide for the development of student abilities in finding and evaluating information, forming judgments, and then using the information and judgments in enhancing his own enterprises and occupational interests.*

There are many sources of information available through magazines, books, pamphlets, bulletins, etc., to which the farmer has access. There is printed matter scientifically compiled for practically every phase of farming, covering crops, and animals, which is available for use especially designed to provide the farmer with the kind of literature that he needs to solve his problems and to enlighten him still further in those things in which he may be successful already.

It is highly important that the student be taught how to find that which applies directly to specific situations so that only such literature, studies, and research materials which are of practical value may be used in attempting to evaluate his own situation.

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[6] Cook, Glenn Charles, Handbook on Teaching Vocational Agriculture, Interstate Printing Co., Danville, Ill., 1933, p. 69.

The student must be taught the art of interpreting trends in such matters as production, prices, demand, profits and other items which are control elements in farming. Attention should also be given to developing within the pupil rational judgments growing out of a study of trends and conditions.

PRINCIPLE VI.—*The curriculum must provide for the development of student abilities in leadership and aggressiveness.*

The failure of agriculture to maintain financial independence has been charged to the lack of leadership. The lack of cooperation has also been charged to the farmer as the cause of his malady. When it is quite apparent that other large industries of comparable scope are organized cooperatively under expert leadership, it appears that agriculture in order to hold its own must follow suit. Only through concerted action are the farmers able to buy and sell advantageously. Only through responsible leadership may the farmer hope to have this concerted action. Because the success of each depends so fundamentally upon the cooperation of all, the vocational agricultural program must be possessed of this philosophy.

A curriculum, which places the boy in a position where he must organize a group of people and lead them to a satisfactory solution of a problem, must be provided. Each student at some time or other should be required to demonstrate some definite evidence of aggressiveness either in planning and seeing through a personal project or by leading a group in a project. We might not be able to witness leadership in every student, but, without a doubt, every student should be required to show evidence of self-help and self-direction in the solution of a problem of considerable consequence.

SUGGESTIVE CRITERIA FOR SELECTION OF CONTENT IN A COURSE IN AGRICULTURE THE GENERAL NATURE OF WHICH IS KNOWN[7]

Type Situations—There are certain teaching situations which have greater value than others, because the learning acquired through them is effective in a relatively wide range of circumstances. So far as the experience which the pupil is given under the teacher is similar to a number of experiences that he will meet in his vocation, to that extent he will profit by it when he meets them. In learning to select and balance rations for his dairy cows, for example, the dairyman has learned more than to feed a particular herd of cows. He has acquired a point of view, knowledge, and even technic, which may be "carried over" in greater or less degree to all the problems of feeding. In feeding even so different a kind of animal as a laying hen he does not have to learn all over again the principles of feeding. He knows some of the feeds, the principle of balance, the function of protein, etc. Such are the *type* situations of teaching. Other things being equal, we should use such content as is widely representative in the vocation, that counts in part at least in a considerable number of situations or that has in the words of the psychologist, the greatest "transfer value."

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[7] Taken from Principles in Making the Vocational Course of Study in Agriculture in the High School, pp. 14-16, Voc. Ed. Bulletin No. 98, Agri. Series No. 22, Rev. 1934. U. S. Dept. of Interior—Office of Ed.

Frequency—But there are situations in which transfer value is relatively unlikely. If a boy learns to milk he has learned to milk and not much else. If he learns to clean milk utensils he has acquired possibly some skill and knowledge usable in other places on the dairy farm, but not extensively at any rate. Nevertheless, because certainly and often he must, as a dairy farmer, milk cows and clean utensils, the teacher is bound to see that he has those abilities. This is the criterion of *frequency*. Other things being equal, the teacher should see to it that the boy has learned those things that are called for must surely and often in the work of his vocation.

Vital significance—There are certain problems in any farm vocation that in the life of a given individual are not certainly or often to be met, but which, if met, are so vitally important that he should be prepared to solve them. A dairy farmer may go for years without a case of bloat or a fire in the barn, but if he cannot treat bloat successfully or put out the fire promptly and effectively he will lose the cow or the barn. This is the criterion of rare but *vital significance*. The teacher should not lose sight of it in planning the content of his course.

Proved superior merit—There are standard methods and practices among farmers in any farm vocation, and there are better methods and practices than the standard. It is these latter that should be taught. When an increasing number of good dairy farmers find it profitable and satisfying to use purebred sires, though the majority still use grades or scrubs, it is proper that we teach prospective dairy farmers to select and use purebred sires. This is the criterion of *proved superior merit*. So far as conditions allow, teach those things that are *known* to be in the line of progress.

Local and seasonal opportunity—It is fairly established that we are more likely to accomplish many of our chosen objectives by teaching through direct participation on the part of the pupil than by observation, and by observation than by book study, recitation, or lecture. But the means to participation and observation are limited by location and season. Hence, other things being equal teachers should select, as well as arrange content according to the opportunities for vivid experience which the location of the school and the season of the year allow. This is the criterion of *local and seasonal opportunity*.

Sufficient possession—If a pupil can hitch and drive a pair of horses efficiently, we have no need to teach him that. If, however, he harnesses or drives badly, it becomes the teacher's concern to direct his experience to the acquisition of proper methods. Do not teach content that the boy already knows. This is the criterion of *sufficient possession* on the part of the pupil. It is as wasteful and damaging to ignore it as to "shoot over the heads" of pupils.

Capacity—Very few pupils matriculate in the high schools who are mentally incapable of learning most of the productive operations and simpler technology which is necessary to the mode of farming for which they prepare. But in the more complex technology and in problems of constructive planning there are those who seem incapable of learning. Sometimes they are so seriously handicapped as to be misplaced in the vocational course, and should be directed into other work. Sometimes they are fit to get along at a lower level of success than the good and the superior pupils, if only they can learn to depend upon others for the solutions of some of the more difficult problems. For example, if a boy cannot learn to balance a ration he may survive as a dairy farmer if he is taught that it is best to let the county agent, or some competent expert, balance his rations for him.

Among younger boys, particularly, there are those who must be excused from certain requirements because they are physically incapable of meeting them. Differentiation of course content on this ground is not uncommon with good teachers. In the New York survey, for example, physical defects account for a number of modifications in courses.

The practice is wise. We should not attempt to use for teaching purposes a problem which the pupil is *physically or mentally incapable* of solving.

Interest—It is relatively easy to plan in advance what a pupil must "know and be able to do" to make himself efficient in his prospective vocation. But we cannot list the insights and emotional values which make the vocation a true calling. There are many insights of science, social meaning, esthetic meaning, and instinctive appeals, such as love of animals, which contribute in no observable fashion to efficiency, but which may be nevertheless, in the calling aspect of vocation, among the most valuable products of teaching. Pupils vary enormously. What enthralls one pupil bores another. But the teacher should be prepared to follow a manifest interest even when it leads him to a considerable distance from the immediate problems of productive business. To work with a boy in pursuit of an interest which makes a job worthwhile to him is good vocational teaching. Such cannot be laid out on paper as part of the content for a whole group. It is a part of content that is selected in terms of the individual boy as his teacher comes to know him. The happiness of many pupils depends largely upon the successful development of interests. Fortunately, however, the correlation between efficiency and happiness is high, and we shall seldom find conflicts.

The criterion of interest is difficult to use, but it should not be lost from sight.

Immediate needs—Close to interest is the factor of *immediate needs* of the pupil. A pupil on a farm may need to learn some things of relatively minor preparatory value in order to be effective and happy in his farm work as it is now. It is not to be forgotten that the life of a fifteen year old boy is just as important in itself as that of the successful farmer of forty. Among the items of content that do have large preparatory value certainly precedence should be given to those that serve immediate needs of the pupil in agriculture. But on the whole the consideration of immediate needs is less a factor in content selection than in teaching method.

CURRICULUM

Curriculum making may be said to have two distinct approaches, namely: (1) the sociological approach and, (2) the psychological approach. They may be outlined as follows:

I.—Sociological.

1. Status of agriculture.
2. Population trends.
3. Farm ownership and tenancy.
4. Type of farming.
5. Agricultural resources.
6. Dominant interests.
7. Status of agricultural education.
8. Legal provisions relating to agricultural education.
9. Costs of agricultural education.
10. Federal, state, and local aid.
11. Economic need and demand.
12. Economic and social change.

II.—Psychological.

1. Native intelligence of student.
2. General education of student.
3. Agricultural information of student.
4. Managerial or executive ability of student.
5. Field and chore skills of student.
6. Mechanical ability of student.
7. Business ability of student.
8. Physical capacity of student.
9. Zeal of student.

Not only must the teacher of vocational agriculture concern himself with content and subject matter materials, but also with the effectiveness with which the child may master the content and make it a significant aspect[8] of his environment.

The problem before us may be briefly comprehended in the following statement by R. M. Stewart, Professor of Rural Education, Cornell University.

"Those interested in the organization and methods of handling the content of agriculture, its supporting sciences, and the vehicular subjects needed for its adequate use and dissemination in the education of youth for farming vocations have during the last decade or more shared in the general agitation for the reconstruction of the curriculum. In addition they have carried on collaborative experimentation in the schools. In fact, no little credit is due the leaders in agricultural education who have been responsible for giving form and impetus to the movement for a curriculum that will not only conserve the best of past experience, but will at the same time make vivid and dynamic the school programs that reflect present-day experiences and that integrate the best of these experiences with the traditional subjects into a curriculum which is consonant with the needs of the new day . . . . . . The short time available, after the passage of the National Vocational Education Act, for constructing the program of vocational agriculture for secondary schools, made it necessary to prepare a program based largely on experience gained in other fields. It was logical, therefore, that the first steps in making a curriculum for agriculture in secondary schools should be empirical in character and based essentially upon experience in the colleges.

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[8] See Morrison, Henry C., The Practice of Teaching in the Secondary School, University of Chicago Press, 1926, p. 182.

The programs set up by the several states reflected this general conception. It soon became evident that the practical experience gained on the home farm was to become pivotal in the arrangement of the curriculum. It was also evident that no curriculum of studies could be set up that would have universal validity for all the schools in any given region of the state, to say nothing of the schools of a whole state. This situation presented a most difficult problem, that of setting up a dynamic curriculum sufficiently definite for use by either the relatively untrained teacher or by the teacher of science who may have been called upon to teach the new courses. That the less competent the teacher, the more dynamic the teaching material should be, is perhaps true; but, in general, the less competent the teacher, the greater the need also for the fixed curriculum as a means of controlling the instruction."[9]

PRACTICAL ASPECTS FOR AN ENRICHED AGRICULTURAL CURRICULUM FOR RURAL COMMUNITY VOCATIONAL SCHOOLS AND DEPARTMENTS IN PENNSYLVANIA

The following suggestions are submitted with the view of setting forth the possibilities within the scope of the general plan prescribed by the State. It is true that the State does not rigidly prescribe, but makes allowance for the differences between various localities. This provision for flexibility does not license established schools to become satisfied with low standards of efficiency. The following subjects[10] to be considered separately are the major subjects in the agricultural course of study for Pennsylvania. In the light of the various studies in this thesis an attempt is made to outline the comprehensive implications of the subjects prescribed by the State.

Related Science:

This subject lays the foundation for subsequent science courses. It introduces the freshmen to the field of laboratory work which becomes increasingly useful in later years both in and out of school. It is an orientation course designed to give the boy an early scientific point of view. It should give a broad comprehensive view of the science of farming with emphasis upon the inter-relationship of farm activities. This is especially significant in Pennsylvania because of the predominance of both specialized and general farming.

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[9] Whipple, Montrose Guy (editor), Thirtieth Yearbook of the National Society for the Study of Education, Part I, "The Status of Rural Education," Public School Publishing Co., Bloomington, Ill., 1931, pp. 147-150.

[10] Taken from Vocational Agriculture in Pennsylvania, Bulletin No. 8, 1929, pp. 12-20, Department Public Instruction, Harrisburg, Pa.

Poultry:

Practically every farm in Pennsylvania has some poultry. This course is given with the view of improving the poultry industry. It emphasizes improved breeds and breeding. Poultry management, feeds and feeding are taught scientifically. This course offers the boy training to fit him to conduct successfully small poultry projects. It should prepare him to enter the poultry business because he may be one of the large number of boys who will never go beyond high school. If he wishes to specialize, the way is open for additional training in this field. The course should help the boy to handle both problems of production and marketing.

Vegetable Gardening:

Approximately nine per cent. of the farms in Pennsylvania are self-subsistence farms. Vegetable gardening instruction is very vital to such as need to depend primarily upon home-raised vegetables. Practically all farms have vegetable gardens. Various sections of Pennsylvania specialize in truck gardening. Emphasis should be placed upon giving a complete, well-rounded course in vegetable gardening in Pennsylvania agricultural schools.

Ornamental and Landscape Gardening:

This course should train the boy to become a ready planner in making the home and farmstead attractive. The course as such need not be long or take up much time, but frequent reference should be made to beautifying the farm home. Inspection tours serve as a very useful aid in developing this phase of agricultural education.

Farm Mechanics:

Automobiles, motor trucks, tractors, gas engines, telephones, radios, heating systems, electrical systems (water and light) are becoming more and more common things among rural people. This course trains the boy in the use and care of tools. It trains him in the actual making and repairing of farm equipment. It helps him to practice economy by teaching him to help himself. He may learn concreting, black-smithing and construction work. Because of the universal use of machinery, fundamentals of operation, care and repair of machinery should be taught thoroughly.

Farm Crops:

This subject needs to be taught universally. Crop specialities, as well as crops as contributory farm enterprises, are found in practically every county in Pennsylvania. This subject gives instruction in principles of plant production, relation of plants and soil of various communities, classification of farm crops, and the production of crops. The course treats specifically those phases of farm crops that have to do with the culture, climatic conditions, soil requirements, rotation, harvesting, and marketing of crops. These are studied generally on a seasonal sequence basis. The course should particularly point out local community soil adaptations and possibilities.

Dairying:

More than one-fourth of the farms in Pennsylvania are classified as dairy farms. There are over 3,000 animal specialty farms. Where these types of farms are predominant this subject will receive considerable emphasis. A major portion of the instruction will deal with feeding, breeding, testing the value of pure-bred sires, etc. A laboratory for giving this kind of instruction is a necessary part of the school plant. This is especially true in dairy communities. The home farm becomes, frequently, the best practical laboratory. The relation of the production of dairy products and marketing with regard to the law of supply and demand should be considered in conjunction with the problem of dairying as an enterprise.

Animal Husbandry:

In a few sections of the Commonwealth, animal husbandry should receive a large portion of the time. There may be a need for increasing the production of livestock. In some communities the fattening of beef cattle is found to be profitable. The raising of hogs, sheep or horses may be profitable in other communities. The course must not only provide training in raising animals, but in caring for and maintaining them for successful maintenance and operation of the farm. Training in the interpretation of trends in market value of animals should accompany the training given in production.

Fruit Production:

Many counties in Pennsylvania have fruit-growing as one of a few enterprises. A rather limited number, however, grow fruit on a large scale. The growing demand for fruit warrants an increased effort in developing the fruit industry in Pennsylvania. Land that may not be adapted to general farming may be excellent for fruit growing. The course provides for training in understanding fruit varieties, culture, fertilizing, pruning, spraying and marketing.

Among the interesting laboratory exercises and demonstrations carried on by the boys are the making of spray materials, grafting, study of insects, grading, standardizing and packing. Many boys renovate the much-neglected farm orchard while taking this subject and sometimes use this as a project.[11]

Farm Accounts:

This course is designed to train the boy to keep books in order to figure his profit or loss just as a person engaged in a business would. By developing the business phase of farming the boy may become able to be his own judge on matters pertaining to farm crops paying well, holding their own, or losing.

He may be able to determine which to continue and which to discontinue if he is able to keep reliable records. This course should aid in the wise administration of farm finances. It should also serve as an agency in assisting the farmer to protect himself against financial failure.

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[11] *Ibid.*, p. 18.

Rural Law:[12]

In this subject a study is made of the farm laws of Pennsylvania; the laws relating to foods and markets, shipping of livestock, etc. Many other laws of interest to farmers are studied. With a little knowledge of law, many dollars can be saved by avoiding useless litigation.

Rural Sociology:[13]

The social side of the rural community must not be neglected. This is touched upon in this course with the hope of making a background for better health, sanitation, and the development of entertainment and social organization that will lead to a better and happier rural citizenry.

Farm Management:

This is a four-year subject. It is intended to prepare the senior to enter upon the management and operation of a farm to which in all probability he is looking forward. By this time he should have completed successfully at least three projects. He should now be able to enter into the activity of good management with a real appreciation of the significance of farming as an occupation and a business upon which he may depend for a livelihood.

AGRICULTURAL PROGRAM

Two kinds of programs somewhat different, but which still bear great similarity should be cited at this point. They are the "Annual Program" and a "Long-time Program."

It is believed that the long-time program is more valuable than an annual program, that is, a plan that takes into consideration only one year's work at a time irrespective of the work to follow in succeeding years. A long-time program includes a plan covering at least four years of work.

The "long-time program of work plan" is discussed and set forth in sample form rather ably by Glenn Charles Cook, the author of "A Handbook on Teaching Vocational Agriculture;" the statement follows:[14]

"After the community survey is completed and the advisory board chosen the next step is the planning of a long-time program. A long-time program is similar to that of an annual program except that it is planned to cover a period of years and in less detail than the annual program. Instructors ordinarily can have a much more effective program in the community where they remain in the same school for several years; they are able to continue and add new projects to their program as they become better acquainted with local conditions. When a department is first started in a school, plans for a long-time program of work should be outlined; this will aid very materially in establishing the department in the community. These plans should be filed in the department. It must be remembered that any plan must be flexible so as to meet any necessary changes.

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[12] Bulletin No. 8, p. 19.

[13] *Ibid.*, p. 20.

[14] Cook, Glenn Charles, A Handbook on Teaching Agricultural Education, pp. 84-87, Interstate Printing Co., Danville, Ill., 1933.

The most worthwhile and beneficial programs of work cannot be carried out in a single year. For example, the community may need to grow more sweet clover or swine, but it takes two or three years before an effective program can be put into practice. Many farmers will want to see such practices tried by the students before they themselves try the plan. It takes a few years to show the benefits and results of such planning. The long-time program given in this chapter was marked out after a careful survey was made in one community."

This particular program is divided into definite years of work. However, some may prefer to merely plan their program without dividing it into years. The writer likes this type of organization because it shows each year what the instructor is striving to do and the expansion or growth in the program desired. The fifth year is a summary of all the preceding years and indicates the goal the instructor hopes to reach at the end of the fifth year. Under this plan when an instructor is replaced by another it is very easy for the new man to see what his predecessor has endeavored to do and what his plans were for the future. After all it does not make so much differance as to the type of plan an instructor has—the main thing is to have a plan and then work it.

1932-33.

1. Teach Agriculture I and III.
2. Stress more corn throughout the community.
3. Stress value of growing adapted varieties of corn.
4. Stress better seed throughout the community.
5. Stress better legumes throughout the community, especially in the northeastern part.
6. Stress better tillage practices throughout the community.
7. Encourage less wheat in the community.
8. Stress more diversification.
9. Hold a father and son banquet.
10. Stress the need of farm mechanics on the farm.

1933-34.

1. Teach Agriculture II and IV.
2. Continuation of first year's work.
3. Stress pure-bred sires.
4. Stress more swine and poultry.
5. Stress better feeding practices for swine and poultry.
6. Stress better housing of swine and poultry.
7. Stress hog lot and poultry sanitation.
8. Hold evening school for adults.
9. Hold junior fair.
10. Stress the marketing of farm products.
11. Encourage farmers to have a home shop.

1934-35.

1. Teach Agriculture I and III.
2. Continuation of first two years' work.
3. Stress the need of better dairy cows.
4. Stress cow testing work.
5. Stress better balanced rations for dairy cows.
6. Encourage more silage. . . .
7. Stress farm records.
8. Stress crop rotations.

1935-36

1. Teach Agriculture II and IV.
2. Continuation of first three years' work.
3. Encourage a cooperative creamery.
4. Hold a more extensive evening school program.
5. Encourage part-time work for students out of school.
6. Ask for assistant during winter months to help with evening schools and part-time work.

1936-37

After the courses to be taught have been determined it becomes necessary to determine the type of enterprise that is to be taught. There must be a carefully outlined plan for time allotment. The following is a sample of yearly teaching plan for the animal husbandry course.[15]

1.	Introduction	8 days
2.	Feeds and Feeding	12 "
3.	Dairy	30 "
4.	Beef	22 "
5.	Swine	24 "
6.	Horses and Mules	15 "
7.	Sheep	22 "
8.	Poultry	20 "
9.	Bees	6 "
10.	Examinations	6 "
11.	Miscellaneous (extra holidays, etc.)	15 "
	Total	180 "

"The matter of schedule-making as to specific periods allotted to agricultural education in the daily schedule must be left up to the one responsible for this work in each local school.

"Those schools which are established as vocational schools and to a great extent those that have departments of vocational education devote one-half day of each school day of the week to the agricultural program. Those schools in which courses are conducted by itinerant county teachers or supervisors frequently provide for 90 minutes instruction in agriculture weekly.

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[15] Cook, Glenn Charles, A Handbook in Teaching Agriculture, p. 93, Interstate Printing Co., Danville, Ill.

"Since it is true that each county or the various communities of which the county is composed are characterized by some one or few major farm interests and farm specialties, it logically follows that the program of agricultural education should be fashioned in such a manner as to represent a program providing for instruction on the basis of major, contributory, and minor phases.

"That part of the boy's training which would have to do with instruction in subjects relating to his major interests would receive more time and emphasis than any other phase. For example, if a boy is interested in dairying as a major enterprise, the curriculum should provide training to satisfy the needs of the boy. Dairying should be given first place with appropriate portions of time spent upon instruction in enterprises of a contributory and minor nature. That of a contributory nature would be instruction in crops. Crops are considered contributory because they serve as a factor in reducing overhead expense by way of providing feed otherwise purchased from commercial sources. Then time for instruction in an agricultural phase of a minor nature must be given in order to provide a diversity of occupation as well as auxiliary sources for "tiding over" times when markets for the products from major enterprises are unfavorable. Such a minor phase, for example may serve as instruction in raising poultry which the boy may wish to raise on a small scale.

"Whatever the content of the course may be with regard to major, contributory, and minor interests it should be organized, as a guarantee of effectiveness, upon the basis of a "unit course" organization plan.

"A unit course in agriculture is a course having a definite objective dealing with the whole or a part of a farm enterprise or with related activities pertaining to the management of the farm as a whole.

* * * * *

"A related farm activity in this connection refers to such activities as the use of commercial fertilizers occurring in more than one farm enterprise, or in some cases, not identified with any particular enterprise, but having to do with the management of the farm as a whole."[16]

RELATION OF SUPERVISED FARM PRACTICE PLANNING TO INSTRUCTION IN VOCATIONAL AGRICULTURE[17]

The best measure of the value of instruction is what the student does with what he has learned. If he uses it, he has usually profited by it. If he does not use it, there may be some cold-storage values but these will be questionable. In the first place, if the boy does not use what he is taught and is not planning to do so while he is being taught, his interest is usually at a low ebb. In general we do not learn what we are not interested in learning. In the second place, it is difficult for a teacher to secure adequate participation on the part of the student in any other way than through a supervised farm practice program. When no such program is set up the tendency is to deal with merely information teaching content. The cold-storage values created are largely a type of informational values which are not worth much to start with and will be constantly deteriorating through lack of use.

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[16] Agricultural Evening Schools Bulletin No. 89, Agricultural Series No. 17, 1930, Federal Board for Vocational Education, Washington, D. C.

[17] Taken from Supervised Farm Practice Planning, Bulletin No. 163, Agricultural Series No. 41, pp. 1-5, 1932, Federal Board for Vocational Education, Washington, D. C.

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The content of a course of study in vocational agriculture should be derived largely from the type or types of farming prevailing in the locality, and be built up on a selective basis, to represent a fair composite of the farming programs of the members of the class . . . .

The course of study for each year should be flexible enough to meet the instruction demands growing out of the student's supervised farm practice. Since a boy's farming program represents a cross section of farming, the course of study should be organized on the same basis, instead of by segregating portions of the course, such as crops studies in one year and animal studies in another year—on an abstract subject-matter basis. Secondly, the course of study should be organized on a farm-job unit basis, instead of on a farm-enterprise basis or—worse yet—an informational subject-matter basis. Jobs in the different enterprises may be distributed over more than one year as best fits the needs of the students as their farming programs develop . . . . . .

Following is an example of a four year course of study with jobs distributed from year to year as designed to best serve a majority of the class members. The time assignments are indicated in order to give an idea of the probable demands for instruction in the different jobs for the different years, but these time assignments are likewise flexible and subject to the actual needs as they develop in connection with the supervised farm practice programs of the pupils. This course is submitted as an illustration of an attempt to meet instruction needs for a particular situation and should be regarded merely as suggestive for other specific situations.

On the basis of the study made on "major farm enterprises" for the counties of Pennsylvania the following plan for the distribution of farm enterprises is suggested. This plan is for the Chester County agricultural schools. Each county of the state would have a plan according to its own needs, time allotted for each enterprise according to the recognition desired.

The number of periods assigned to each enterprise are double periods of at least 45 minutes each.

TABLE XXIX. SUGGESTED PLAN FOR DISTRIBUTION OF PERIODS DEVOTED TO FARM ENTERPRISES BY YEARS FOR CHESTER COUNTY AGRICULTURAL SCHOOLS

Enterprise	1932-1933 Freshman	1933-1934 Sophomore	1934-1935 Junior	1935-1936 Senior
Dairying	30	30	30	20
Poultry	30	25	25	15
Potatoes	15	15	5	
Fruit	25	20	20	5
Silage corn	10	5		
Forage Crops	10	10		
Vegetable gardening	10	10	10	
Farm engineering			30	
Bee-keeping		5	5	
Forestry			5	
Swine		10		
Farm management				90
Farm shop	50	50	50	50
	—	—	—	—
Total	180	180	180	180

The purpose of the foregoing table is to assist the educator in guiding himself in planning a four year course for his school so that it may be made to fit the community needs in which the school is located.

It has been pointed out that the course of study should be broken down into its component parts, on a farm-job unit basis. This may be done for all types of enterprises, namely: major, contributory, and minor. One major enterprise broken up into farm job units covering the four year high school course will suffice to illustrate the manner in which it may be done. For example, dairying the first year should include the following units: (1) Selection of dairy cow; (2) Milk testing; (3) Feeding; (4) Selection of calf; (5) Feeding and caring for calf; (6) Caring for the milk; (7) Pasturing calves; (8) Planning a dairy barn program.

The second year course should include such units as: (1) Buying the dairy cow; (2) Care of cow at calving time; (3) Feeding; (4) Care of dairy sire; (5) Keeping milk records; (6) Purchasing milk equipment; (7) Operating milk equipment; (8) Separating milk; (9) Balancing the dairy herd ration.

In the third year the course should include: (1) Feeding of the calf from 2 weeks to 6 months; (2) Feeding it from 6 months on; (3) Buying feed for dairy herd; (4) Planning a feeding schedule; (5) Dehorning calves; (6) Caring for cow on test; (7) Handling test records; (8) Choosing a market; (9) Registering thorough-bred stock.

The fourth year should cover: (1) Managing and improving the herd; (2) Planning a dairy barn or rearranging a dairy stable; (3) Keeping dairy herd records; (4) Marketing dairy products.

It should be noted that farm management is left for the senior year. The main farm-job units into which it may be broken are: (1) Determining the type of enterprises to be conducted; (2) Farm improvement; (3) Financing the farm business; (4) Keeping necessary records; (5) Taking inventory; (6) Making purchases for farm use; (7) Insuring building and equipment; (8) Other types of insurance; (9) Hiring labor.

Some such procedure as suggested above should prove helpful to teachers, supervisors, and administrators in making the program of vocational agricultural education functional.

A practicable plan for the distribution of shop work should be laid out for each school in accordance with the problems that are sure to be met on the farm. The following plan was issued by the Federal Board for Vocational Education in 1932.

TABLE XXX. Distribution of Shop Work

	Number of double periods			
	1930-31	1931-32	1932-33	1933-34
	I	II	III	IV
Woodworking[18]	50			
Tinsmithing		35		
Rope work		15		
Blacksmithing			30	
Leather working			15	
Simple plumbing			5	
Gas engine repair				15
Farm machinery repair				25
Concrete construction				10
Total	50	50	50	50

PROJECT WORK

It has been seen that the annual state project contests and home projects are on the increase. The findings in this study clearly show that there is keen interest in this phase of agricultural education. This interest, in all probability, is a natural outcome of the practicability of the activities in which the boys and girls engage. The vocational teacher may enjoy the distinct advantage of being able to sell his program in that real, first-hand experience may be used as motive power. This experience orients the adolescent pupil so that teaching is made easier as well as more effective. The study of the project work situation shows that interest is on the increase. This interest must be sustained and used, so that further interest and accomplishment may result.

"The instruction in agriculture, in order to function, must be of a practical nature. A great deal of time is devoted to the practical side of agriculture in the laboratory, through field trips and in the agricultural show during the school term.

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[18] Woodworking appears only during the first year. It is assumed that part of the work in tinsmithing, blacksmithing, farm machinery repair, and concrete construction will deal with woodworking. Bulletin No. 163, p. 5.

"Vocational work, in order to be successful, must be on the "learning to do by doing" basis. One of the chief requirements is that every boy carry on an agricultural enterprise which is known as the home project. This is generally conducted on the home farm.

"Early in the school year, with the cooperation and advice of his father and the vocational supervisor the boy decides on the project he wishes to conduct. If it is in the poultry or livestock field, the boy is advised to start at once so that the problems arising from the project can be studied in class and that a complete year's record can be made by the time the next year's project is started. If it is a crop project, time is allotted during the school year for study of the various phases of the problem, so that when spring comes the boy is ready to do the actual work on his project. In order to obtain school credit for the instruction in agriculture, the boy must complete a satisfactory project each year.

"It is highly desirable that the major part of the labor of the project be done by the boy. A cost account record should be kept from the time the enterprise is started until completed. This forms a real laboratory for practicing things that the boy has started during his farm accounts course. Projects vary in size—potato projects from 1 to 8 acres, and poultry from 100 to 1000 birds. Other projects have similar variations. It is always desirable to select a project along the line of the agricultural instruction given that particular year. For example, the majority of the projects the first year center around vegetable gardening and poultry, the second year farm crops, dairy or animal husbandry."[19]

For Pennsylvania the following types of home projects or farm enterprises stand out as having great possibilities: poultry project work, fruit-growing project work, potato-raising project work, truck-gardening project work, dairy project work and hog-raising project work.

"Every boy should either own his enterprises in full or be in partnership with someone else. He should pay all expenses necessary in carrying on the work and then share all profits and losses. Too many times a boy has 40 or 50 acres of grain that he calls his project. He reports his final records to the teacher, who, in turn, reports them to the state supervisor. According to the report, the boy has made two or three hundred dollars profit, but when interviewed it is found the boy did not make a cent from the project as the father owned the grain and the boy merely kept a record of the expenses and receipts. Then we wonder why the boy is not interested in the work. Who could blame him? Ownership and responsibility are necessary for proper interest and for educational results."[20]

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19. Bulletin No. 8, p. 27, 1929.

20. Supervised Farm Practice Planning, Bulletin No. 163, p. 45, Washington, D. C., 1932.

In order to make project work effective there have been set up certain carefully designed procedures. These procedures are the results of studies made of various states. They are as follows:

A preliminary estimate of costs, labor, distribution, production receipts and net income is essential both for intelligent selection of project enterprises and for effective planning of the practices to be followed after the projects have been selected.

The use of arbitrary or suggestive standards for project practices is justified for guidance and promotional purposes, but should never take the place of planning for each boy's individual situation on the basis of his specific working conditions.

It should be noted that such standards can deal properly with only the operative phases of a boy's project on such jobs as can be handled safely on the basis of standard or accepted practice.

This detailed planning (Project planning) should be continued throughout the year on a seasonal basis, closely integrated with group instruction wherever feasible and supplemented by individual instruction as needed.

A written project plan should serve (1) as an effective learning device, (2) as a reliable guide to practice, and (3) as an essential supervisory device.

A boy's program of supervised farm practice should be based on a type of farming. Such types of farming are fairly stable, and a long time farming program must therefore be developed consistently from year to year if it is to be successful.

Revision of plans from year to year should be based on analysis and interpretations of the records of preceding years.

In order to make reliable comparative studies of farm enterprises, it is highly important that the boy define each farm enterprise which he is conducting in terms of the main product which he expects to have for sale or use.

A simple rule is that cost of production of the main product equals the total actual expenses minus the miscellaneous credits including value of by-products and increase in value of producing or foundation stock.

The individual items, of course, should be checked for inaccuracies and omissions before subtotals and totals are figured.

In the case of expenses or receipts the teacher should insist that all necessary descriptive data and details be given in reference to what the item is, its amount, its per unit cost or value, and the total cost or value.

STATE PROJECT CONTEST

The Department of Public Instruction conducts annually a State-wide Project Contest. This may be considered the consummation of the local contests and shows. This plan gives the boy and girl a chance to show his best efforts in presenting the product of his work.

This State-wide Contest should continue to serve as a tremendous stimulus to local effort. This contest should serve to increase the already existing interest and should encourage a more widespread interest in project work.

Not only should there be an increase in enrollment in project work but there should be an appreciable increase in the size of projects all over the State.

The standards set up, in order for a project to qualify for this contest are as follows:[21]

Baby Beef	One animal
Bee-keeping	Five colonies
Corn	Two acres
Dairy	Two milk cows
Fruit	Fifty trees or ½ acre small fruit
Potatoes	One acre
Poultry	Two hundred chicks or fifty hens
Sheep	Four ewes
Swine	Four shoats or one sow and litter
Small Grains	Three acres
Farm Home Improvement	Scope decided by committee
Truck	One-half acre or vegetable garden one-eighth acre

Other requirements:

(a) A carefully organized plan and well-written story.

(b) A minimum of 50 per cent. pupil ownership, except in the case of Dairy Record and Home Improvement projects.

(c) A minimum of five visits by supervisor of agriculture with comments in the record book.

FUTURE FARMERS OF AMERICA

"The Future Farmers of America is a national organization of affiliated State organizations which are composed of local chapters in schools having organized instruction in vocational agriculture under the provisions of the Smith-Hughes Act.

"Local Future Farmers of America chapters shall not be established in schools where organized instruction in vocational agriculture is not given under the provisions of the Smith-Hughes Act.

"Delegates from local chapters shall meet in State convention, organize, adopt a State constitution not in conflict with the national constitution, elect officers, set up a program of work, and then apply to the national executive secretary for membership in the national organization. Upon receipt of a charter the State organizations and the members thereof may then be known as Future Farmers of America."[22]

The four grades of membership based upon achievement are: "The Green Hand," "Future Farmer," "State Farmer" and "American Farmer." These represent the successive stages of achievement to which the farm boy should attain. Certain standards of excellence are placed before the boy which give meaning to the efforts he is expected to put forth.

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[21] Bulletin No. 8, p. 29, 1929.

[22] Constitution and By-Laws for Future Farmers of America, Article II, Section A, B, and C, p. 298.

The Future Farmer organization can be made a very effective tool in helping the boys on the way to become better farmers. This may be more readily understood when one looks at the list of activities of the "Keystone Branch State Program of the Future Farmers of America."

1. Hold regular meetings of the local F. F. A. chapters.
2. Conduct an F. F. Tour.
3. Hold a picnic for the members of the local chapters.
4. Improve school grounds.
5. Supervise and assist in conducting community fairs.
6. Plant forest tree seedlings.
7. Enter exhibits at the local fairs.
8. Enter exhibits in the vocational classes at the State Farm Project Show.
9. Improve the standard of the Home Project work.
10. Participate in the activities of the Future Farmers Week at State College.
11. Enter teams in the Vocational State Contest
    a. Livestock
    b. Dairy
    c. Poultry
    d. Farm Mechanics
    e. Public Speaking
    f. Demonstration Contest.
12. Hold father and son banquet.
13. Make a study and practice of parliamentary law.
14. Conduct a class project.
15. Send delegates to the State meeting of the F. F. A.
16. Promote home improvement campaign.
17. Promote thrifty savings accounts.
18. Hold several social events throughout the year.
19. Provide new articles for the local papers.
20. Strive to obtain one hundred per cent. membership in each local chapter.
21. Encourage cooperative buying and marketing.
22. Participate in school athletics as an F. F. A. group.
23. Participate in the activities of local agriculture organizations.
24. Interest seventh and eighth grade boys in agriculture by promoting junior project work.
25. Assist in promoting short course for adult farmers.

These activities fully justify the existence of such an organization. All minor clubs in the agricultural school should be subsidiary to this major organization.

APPENDIX B — RECOMMENDATIONS

The following specific recommendations seem pertinent to the foregoing study which reflect a logical outgrowth of the various phases of the study. The writer believes that they find their justification within the bounds of the study itself or within the scope of related matter.

The recommendations are classified under the following titles: (1) School Administration and Organization; (2) Instruction; (3) Pupil Activities; and (4) General.

SCHOOL ADMINISTRATION AND ORGANIZATION

Admission to the vocational course in agriculture should be controlled by certain standard requirements. Admission should be on the basis of a minimum age of 14 and a certificate of completion of eighth grade work. Ability to do vocational work and work in required academic subjects should be a major consideration. The desire of the pupil and the wishes of the parents are of vital importance.

The ability of the pupil in farming and in shop should be determined by appropriate aptitude tests. Admission should be based on conference of pupil, teacher, and parent resulting in securing an agreement to and arrangement for a four year project program. Also ability to finance a project program must not be overlooked.

It is advisable to conduct an orientation course in junior high school or in the ninth grade to give the applicant an adequate background.

The number of pupils to be trained locally should be on tbe basis of annual need of farm owner-operators, farm renters, farm laborers, farm managers and agriculturally-trained men in related agricultural pursuits. Possibility of development of new farming enterprises as related pursuits, and suitability of the region as a training center for its particular type of agriculture, are factors to be considered in determining the number of pupils to be trained. Finally, the number is controlled by such factors as teaching facilities available, financial ability of school district, and number of teachers available.

The instruction that should be available to pre-vocational groups through junior projects should be specific, simple, and directly applicable. The instruction for the vocational group of regular high school age should be comprehensive, progressive and technical. The instruction for the out-of-school group should be definite, practical, and brief. Instruction in farm arithmetic, letter writing, and farm accounts is highly desirable.

Vocational instruction should be organized on the basis of 90 minutes a day, 120 minutes a day, or a full half-day. The teacher should be given a sufficient number of open periods for necessary preparation.

The academic program of vocational pupils should include the subjects required for graduation from a secondary school plus any such other course which he is capable of handling.

Vocational instruction should be correlated with academic instruction in English, science and public speaking and certain phases of the social sciences.

The agricultural course should be organized on the basis of units of instruction instead of subjects. These units should begin in the ninth year and not later than the tenth year.

School credits should be given only upon completion of a required project and required classroom and shop work. Credits should be given on the basis of annual work, not on parts of a year's work.

The amount of credit given should be determined by the amount of time per day devoted to agriculture and the scope and character of the home project.

Administrators should see to it that minimum classroom facilities are provided in strict adherence to the minimum standards set up by the State Department of Public Instruction. Minimum requirements for classroom and laboratory equipment should be sufficiently adequate that they alone would afford the student an opportunity to procure the school experience he needs for his occupational choice.

Agricultural education centers should be available to all farm communities throughout the State of Pennsylvania. Whatever the number of agricultural education centers, they should be so located as to afford equal access to the farm population.

The following may (Fig 9) shows the number of standard departments of vocational agriculture that should be in operation throughout Pennsylvania. The number of departments recommended is based upon farm boy enrollments. This map is not significant with respect to exact geographical location of centers but rather with respect to the number of centers and their approximate locations. Both present and proposed standard departments of vocational agriculture are included.

INSTRUCTION

Whenever possible, full time instructors should be employed. The turnover of instructors in vocational agriculture should be held to a minimum because of the necessity of carrying out uninterrupted the long-time programs in course planning and project planning, which should gradually displace the annual type program.

Classroom teaching should be built up on the basis of a carefully organized plan of work, adequate daily preparation on the part of the teacher, definite lesson assignments, and supervised study. Furthermore, the topic discussion method, if skillfully handled, the carefully directed use of contracts, and a closely supervised use of notebooks contribute to efficiency of instruction.

A supplement to classroom instruction is laboratory work. This should be carried out in the combination classroom and laboratory and should involve such factors as adequate table and desk equipment, adequate equipment for milk testing, soil testing and use of chemicals. Laboratory practicums should be prepared in outline form. Pupils should work in small groups when equipment is limited but whenever possible they should work independently. De-

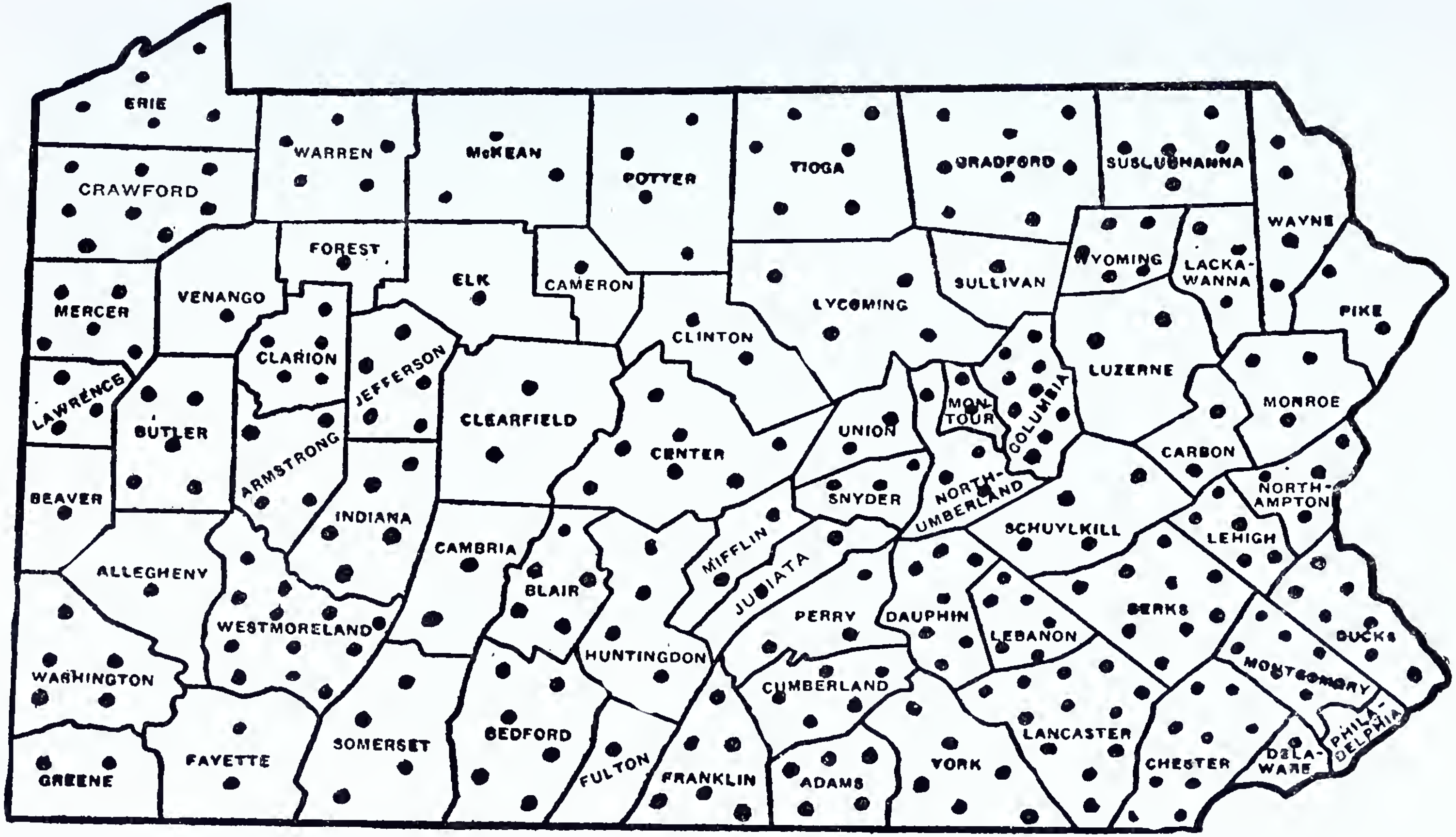

FIG. 9—Standard Departments of Vocational Agriculture, Pennsylvania

tailed records of all experimentation and observations should be kept. Application of facts or principles learned should be made freely.

Field trips are another supplement to classroom instruction. They should involve a clearly defined purpose, a carefully prepared plan, a previous visit by the teacher to the place to be visited by the class, individual pupil participation while on the field trip, pupil-made records of observations or information, class discussion on significant observations and the direct application of facts or principles learned.

Minimum facilities for farm mechanics should be provided according to recommendations issued by the Bureau of Agricultural Education. This same Bureau submits that farm mechanics instruction should involve the following factors:

(a) A two-year, three-year or four-year course.
(b) Completion of at least the fundamentals of the various fields of farm mechanics in each of the above mentioned courses.
(c) Instruction in the care and use of tools.
(d) Group instruction in fundamental principles and practices in farm mechanics.
(e) Individual instruction in fundamentals, when necessary.
(f) Projects of practical or usable nature as far as possible.
(g) As many projects as possible involving repair work and new construction for the parents of the pupils.
(h) The use of pupils' home materials for home repair work, when possible.
(i) The purchase of good quality materials when secured commercially.
(j) A simple sketch of the job to be done, drawn by each pupil and approved by the teacher before work is started.
(k) Approval of each project by the teacher, when finished.
(l) Grading the pupil on the work done.
(m) Keeping an individual shop record card for each pupil, with room for four years of work, in order to prevent unnecessary repetition of work and to avoid omitting important phases of the program.

Teaching materials should include carefully selected reference books containing specific and related matter in the field of agriculture.

Textbooks should be both practical and up-to-date. Bulletins, charts, pictures, film strips and other illustrative matter should be made available. They should always be properly filed for reference.

Instruction should be arranged, in so far as possible, on a seasonal sequence basis.

In anticipation of combining separate classes in subsequent years the annual plan of work should be so organized as to avoid overlapping of subject matter. Each yearly plan of work should include, besides classroom and laboratory work, field trip work, project planning and supervision as well as the major items of community service.

The instructor should see to it that the part of the curriculum in any one year is varied to suit the needs of the pupils. He should also provide for a continuity of enterprise in support of a long-time program of study.

Unifying and integrating content should be related to the enterprises on the basis of significance and difficulty.

The plan of instruction should place the most important crop and animal enterprises in the first years, with specialties and specialized studies following later. Instruction in service subjects such as soils and fertilizers, shop exercises, etc., would be introduced gradually in relation to enterprises and their organization in the farm business, taking on management emphasis toward the end of the high school period. Integrating and unifying subjects would come in the last year or years as the basis of organizing and evaluating the principles that were operating in the enterprises in which instruction was given.

This suggests further the value of individual instruction in vocational agriculture.

"An experiment conducted by Roy W. Roberts during the school year 1927-1928 in seven rural schools of Van Buren County, Arkansas, indicated that pupils in these schools made more satisfactory progress in vocational agriculture through individualized instruction than by means of group or mass instruction."[23]

The instructor should take advantage, as freely as possible, of the practical training the student may receive at home. A kind of apprenticeship training in addition to the direct training afforded by the school may be carried on profitably.

PUPIL ACTIVITIES

The project program should be launched only after all essential features of project work such as scope, duration, ownership, and other important factors are thoroughly understood. Projects should be considered individually through individual instruction and guidance. Projects should be checked daily, if possible, or not less than once a week. All projects should be conducted on a business-like basis. Accurate records, carefully kept and checked, should be a minimum requirement.

Each new project should be started as early in the school year as possible, and each continuation project should be carried along uninterrupted.

Adequate supervision of each project is essential. A definite record of recommendation should be given the pupil at the end of each supervisory visit.

A chapter of the Future Farmers of America should be organized in connection with every agricultural department or class. Its activities should include leadership, public speaking, parliamentary practice, project improvement, home improvement, community improvement, community service, cooperative development through group action, and citizenship development. Recreation and athletic activities are of great value. The F. F. A. in many communities may

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23. Roberts, Roy W., "Individual Instruction in Vocational Agriculture," Journal of Educational Research, XIX (May, 1929) P. 349.

find the activity of reforestation a valuable enterprise. This organization should participate in, and arrange for local and state exhibits, meetings, contests and demonstrations. Project tours, project banquets, and other social activities are essential features among the various activities. Finally the F. F. A. can prove of great worth in assisting with short courses and in doing publicity work through bulletins, newspapers, and radio.

The program of pupil activities should provide an opportunity for the student to gain a wide variety of experiences in farm practices outside of those in their regular classroom work and project work.

GENERAL

County supervisor's programs should be developed in agricultural counties and communities not now served by agricultural instruction.

There should be an adequate program of State supervision in force.

There should be a more vigorous effort made in getting agricultural communities to establish standard departments of vocational agriculture. This effort should be launched through a central agency of control.

Adequate provision should be made for those communities that would find it impossible to establish a department of vocational agriculture if left to depend upon their own resources.

The community survey should be made the major basis for the determination of the nature of the curriculum and the type of curriculum, to be adopted by the local department of vocational agriculture.

Agricultural education centers should be established to serve communities, rather than districts defined by traditional lines marking township boundaries.

Agricultural educational administration should maintain standards of admission, pupil achievement and credit on a par with academic standards.

There should be a system of standardized tests inaugurated to determine pre-course knowledge. This requirement should be issued by the State Bureau of Agricultural Education.

The agricultural education program should provide for both liberal and cultural training in addition to the regularly prescribed courses of a purely vocational nature.

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